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KHOSLA, CHAITAN
SANTI, DANIEL
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gtcagcaccg tgcgggtgag ttcggtcccc aggcggttgt cgacgtcggc cggcaggttt   75900
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aggagctggc cgagcatgcc gtacggcagg gcccgctcct ccatggagca caccgcgcga   76020
agggtgacga agccggcctt ggccgcggcg gcgtcgagga gttcggtctt gccgcaggcg   76080
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tggagggaac cgaactcgtc atcgcgggcg atcaggtctg ggggagataa gcgcgctatc   76200
acgaatggaa ctacctcgcg accgtcgtgg aaacccatag gcatcacatg gcttgttgat   76260
ctgtacggct gtgattcagc ctggcgggat gctgtgctac agatgggaag atgtgatcta   76320
gggccgtgcc gttccctcag gagccgaccg cccccggcgc cacccgccgt acccccctggg   76380
ccaccagctc ggcgacccgc tcctggtggt cgacgaggta gaagtgcccg ccggggaaga   76440
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tcttcggatc gtcgtcaccg atgcacaccg tgatcggcgt ctccagcggc ggcgcgggct   76560
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ggcccgagac gatcaggtgc gccaccggga gccgctgggc cagctcgaac gcgagtgtcg   76800
cgcccatgct gtggccgaac agcaccagcg gacggtccag ccccggcttc aacgcctcgg   76860
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ggccggggta ctgcacggcg tacacgtccg ccaccggggc gagcgcacgg gccagcggaa   76980
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gaagtgggta ccgatgatcc gcttcacgga catccacagg taccgattgt caaaggcgtg   77400
ctcgtatccc gaggttgacg cgcaggtgac gatcgtgcca ccccgacgtg tcacgtagac   77460
actcgcgccg aacgtcgcgc gccccgggtg ctcgaacacg atgtcgggat cgtcaccgcc   77520
ggtcagctcc cggatc                                                   77536
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<210> 2
<211> 360
<212> PRT
<213> Streptomyces sp.

<400> 2

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Met Thr Ile Val Lys Cys Leu Val Trp Asp Leu Asp Asn Thr Leu Trp
  1               5                  10                  15

Arg Gly Thr Val Leu Glu Asp Asp Glu Val Val Leu Thr Asp Glu Ile
             20                  25                  30
```

Arg Glu Val Ile Thr Thr Leu Asp Asp Arg Gly Ile Leu Gln Ala Val
35 40 45

Ala Ser Lys Asn Asp His Asp Leu Ala Trp Glu Arg Leu Glu Arg Leu
50 55 60

Gly Val Ala Glu Tyr Phe Val Leu Ala Arg Ile Gly Trp Gly Pro Lys
65 70 75 80

Ser Gln Ser Val Arg Glu Ile Ala Thr Glu Leu Asn Phe Ala Pro Thr
85 90 95

Thr Ile Ala Phe Ile Asp Asp Gln Pro Ala Glu Arg Ala Glu Val Ala
100 105 110

Phe His Leu Pro Glu Val Arg Cys Tyr Pro Ala Glu Gln Ala Ala Thr
115 120 125

Leu Leu Ser Leu Pro Glu Phe Ser Pro Pro Val Ser Thr Val Asp Ser
130 135 140

Arg Arg Arg Arg Leu Met Tyr Gln Ala Gly Phe Ala Arg Asp Gln Ala
145 150 155 160

Arg Glu Ala Tyr Ser Gly Pro Asp Glu Asp Phe Leu Arg Ser Leu Asp
165 170 175

Leu Ser Met Thr Ile Ala Pro Ala Gly Glu Glu Glu Leu Ser Arg Val
180 185 190

Glu Glu Leu Thr Leu Arg Thr Ser Gln Met Asn Ala Thr Gly Val His
195 200 205

Tyr Ser Asp Ala Asp Leu Arg Ala Leu Leu Thr Asp Pro Ala His Glu
210 215 220

Val Leu Val Val Thr Met Gly Asp Arg Phe Gly Pro His Gly Ala Val
225 230 235 240

Gly Ile Ile Leu Leu Glu Lys Lys Pro Ser Thr Trp His Leu Lys Leu
245 250 255

Leu Ala Thr Ser Cys Arg Val Val Ser Phe Gly Ala Gly Ala Thr Ile
260 265 270

Leu Asn Trp Leu Thr Asp Gln Gly Ala Arg Ala Gly Ala His Leu Val
275 280 285

Ala Asp Phe Arg Arg Thr Asp Arg Asn Arg Met Met Glu Ile Ala Tyr
290 295 300

Arg Phe Ala Gly Phe Ala Asp Ser Asp Cys Pro Cys Val Ser Glu Val
305 310 315 320

Ala Gly Ala Ser Ala Ala Gly Val Glu Arg Leu His Leu Glu Pro Ser
325 330 335

Ala Arg Pro Ala Pro Thr Thr Leu Thr Leu Thr Ala Ala Asp Ile Ala
340 345 350

Pro Val Thr Val Ser Ala Ala Gly
355 360

<210> 3
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker

<400> 3
ctagtgggca gatctggcag ct 22

<210> 4
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker

<400> 4
gccagatctg ccca 14

<210> 5
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker

<400> 5
gggatgcatg gc 12

<210> 6
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker

<400> 6
ttaagccatg catccccatg 20

<210> 7
<211> 24
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 7
cgactcacta gtgggcagat ctgg 24

<210> 8
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 8
cacgcctagg ccggtcggtc tcgggccac 29

<210> 9
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 9
gcggctagct gctcgcccat cgcgggatgc 30

<210> 10
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 10
gatgtacagc tcgagtcggc acgcccggcc gcatc 35

<210> 11
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 11
cgactcactt aagccatgca tcc 23

<210> 12

<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 12
atcctaggcg ggcrggygtg tcgtccttcg g 31

<210> 13
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 13
atgctagccg ccgcgttccc cgtcttcgcg cg 32

<210> 14
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 14
atgctagcgg attcgtcggt ggtgttcgcc ga 32

<210> 15
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 15
atctcgagcc agtascgctg gtgytggaag g 31

<210> 16
<211> 4478
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS

<222> (3)..(4466)

<400> 16

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ag atc tgg cag ctc gcc gaa gcg ctg ctg acg ctc gtc cgg gag agc      47
   Ile Trp Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser
   1               5                   10                  15

acc gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg     95
Thr Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr
                20                  25                  30

gcg gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg    143
Ala Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu
            35                  40                  45

cgc aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg    191
Arg Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala
        50                  55                  60

gtc ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac    239
Val Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp
    65                  70                  75

gaa ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg    287
Glu Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr
80                  85                  90                  95

gcc ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg    335
Ala Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg
                100                 105                 110

ctg ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca    383
Leu Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala
            115                 120                 125

tcc ggc acc gac gcc atc acg gag ttc ccg acg gac cgc ggc tgg gac    431
Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp
        130                 135                 140

gtc gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc    479
Val Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe
    145                 150                 155

gtc cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg    527
Val Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala
160                 165                 170                 175

ttc ttc ggc atc agc ccg cgc gag gcc ctc gcg atg gac ccg cag cag    575
Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
                180                 185                 190

cgg gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc    623
Arg Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile
            195                 200                 205

acc ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc    671
Thr Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala
        210                 215                 220
```

```
ttc tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg   719
Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala
    225                 230                 235

acc ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac   767
Thr Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr
240                 245                 250                 255

ggt ctg gag ggt ccg gcg gtc acg gtc gac acg gcg tgt tcg tcg tcg   815
Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser
                260                 265                 270

ctg gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc   863
Leu Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys
            275                 280                 285

tcg ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc   911
Ser Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly
        290                 295                 300

ttc gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg   959
Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala
    305                 310                 315

aag gcg ttc ggc gcg ggt gcg gac ggc acg agc ttc gcc gag ggt gcc   1007
Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala
320                 325                 330                 335

ggt gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac   1055
Gly Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His
                340                 345                 350

acc gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc   1103
Thr Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala
            355                 360                 365

tcc aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc   1151
Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile
        370                 375                 380

cgg cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc   1199
Arg Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala
    385                 390                 395

gtc gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca   1247
Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala
400                 405                 410                 415

cag gcg gta ctg gcc acc tac gga cag gag cgc gcc acc ccc ctg ctg   1295
Gln Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu
                420                 425                 430

ctg ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc   1343
Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly
            435                 440                 445
```

```
gtc gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg   1391
Val Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu
        450                 455                 460

ccg ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg   1439
Pro Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr
    465                 470                 475

gcc ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc   1487
Ala Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr
480                 485                 490                 495

gac cgg cct agg cgg gca ggc gtg tcg tcc ttc ggg atc agt ggc acc   1535
Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr
                500                 505                 510

aac gcc cac gtc atc ctg gaa agc gca ccc ccc act cag cct gcg gac   1583
Asn Ala His Val Ile Leu Glu Ser Ala Pro Pro Thr Gln Pro Ala Asp
            515                 520                 525

aac gcg gtg atc gag cgg gca ccg gag tgg gtg ccg ttg gtg att tcg   1631
Asn Ala Val Ile Glu Arg Ala Pro Glu Trp Val Pro Leu Val Ile Ser
        530                 535                 540

gcc agg acc cag tcg gct ttg act gag cac gag ggc cgg ttg cgt gcg   1679
Ala Arg Thr Gln Ser Ala Leu Thr Glu His Glu Gly Arg Leu Arg Ala
    545                 550                 555

tat ctg gcg gcg tcg ccc ggg gtg gat atg cgg gct gtg gca tcg acg   1727
Tyr Leu Ala Ala Ser Pro Gly Val Asp Met Arg Ala Val Ala Ser Thr
560                 565                 570                 575

ctg gcg atg aca cgg tcg gtg ttc gag cac cgt gcc gtg ctg ctg gga   1775
Leu Ala Met Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu Gly
                580                 585                 590

gat gac acc gtc acc ggc acc gct gtg tct gac cct cgg gcg gtg ttc   1823
Asp Asp Thr Val Thr Gly Thr Ala Val Ser Asp Pro Arg Ala Val Phe
            595                 600                 605

gtc ttc ccg gga cag ggg tcg cag cgt gct ggc atg ggt gag gaa ctg   1871
Val Phe Pro Gly Gln Gly Ser Gln Arg Ala Gly Met Gly Glu Glu Leu
        610                 615                 620

gcc gcc gcg ttc ccc gtc ttc gcg cgg atc cat cag cag gtg tgg gac   1919
Ala Ala Ala Phe Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp
    625                 630                 635

ctg ctc gat gtg ccc gat ctg gag gtg aac gag acc ggt tac gcc cag   1967
Leu Leu Asp Val Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln
640                 645                 650                 655

ccg gcc ctg ttc gca atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg   2015
Pro Ala Leu Phe Ala Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser
                660                 665                 670
```

```
tgg ggt gta cga ccg gac gcg gtg atc ggc cat tcg gtg ggt gag ctt   2063
Trp Gly Val Arg Pro Asp Ala Val Ile Gly His Ser Val Gly Glu Leu
            675                 680                 685

gcg gct gcg tat gtg tcc ggg gtg tgg tcg ttg gag gat gcc tgc act   2111
Ala Ala Ala Tyr Val Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr
        690                 695                 700

ttg gtg tcg gcg cgg gct cgt ctg atg cag gct ctg ccc gcg ggt ggg   2159
Leu Val Ser Ala Arg Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly
    705                 710                 715

gtg atg gtc gct gtc ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg   2207
Val Met Val Ala Val Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu
720                 725                 730                 735

ggt gag ggt gtg gag atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt   2255
Gly Glu Gly Val Glu Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val
                740                 745                 750

ctc tcc ggt gat gag gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg   2303
Leu Ser Gly Asp Glu Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly
            755                 760                 765

aag tgg acg cgg ctg gcg acc agc cac gcg ttc cat tcc gcc cgt atg   2351
Lys Trp Thr Arg Leu Ala Thr Ser His Ala Phe His Ser Ala Arg Met
        770                 775                 780

gaa ccc atg ctg gag gag ttc cgg gcg gtc gcc gaa ggc ctg acc tac   2399
Glu Pro Met Leu Glu Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr
    785                 790                 795

cgg acg ccg cag gtc tcc atg gcc gtt ggt gat cag gtg acc acc gct   2447
Arg Thr Pro Gln Val Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala
800                 805                 810                 815

gag tac tgg gtg cgg cag gtc cgg gac acg gtc cgg ttc ggc gag cag   2495
Glu Tyr Trp Val Arg Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln
                820                 825                 830

gtg gcc tcg tac gag gac gcc gtg ttc gtc gag ctg ggt gcc gac cgg   2543
Val Ala Ser Tyr Glu Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg
            835                 840                 845

tca ctg gcc cgc ctg gtc gac ggt gtc gcg atg ctg cac ggc gac cac   2591
Ser Leu Ala Arg Leu Val Asp Gly Val Ala Met Leu His Gly Asp His
        850                 855                 860

gaa atc cag gcc gcg atc ggc gcc ctg gcc cac ctg tat gtc aac ggc   2639
Glu Ile Gln Ala Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly
    865                 870                 875

gtc acg gtc gac tgg ccc gcg ctc ctg ggc gat gct ccg gca aca cgg   2687
Val Thr Val Asp Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg
880                 885                 890                 895
```

```
gtg ctg gac ctt ccg aca tac gcc ttc cag cac cag cgc tac tgg ctc   2735
Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu
                900                 905                 910

gag tcg gca cgc ccg gcc gca tcc gac gcg ggc cac ccc gtg ctg ggc   2783
Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly
            915                 920                 925

tcc ggt atc gcc ctc gcc ggg tcg ccg ggc cgg gtg ttc acg ggt tcc   2831
Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser
        930                 935                 940

gtg ccg acc ggt gcg gac cgc gcg gtg ttc gtc gcc gag ctg gcg ctg   2879
Val Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu
    945                 950                 955

gcc gcc gcg gac gcg gtc gac tgc gcc acg gtc gag cgg ctc gac atc   2927
Ala Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile
960                 965                 970                 975

gcc tcc gtg ccc ggc cgg ccg ggc cat ggc cgg acg acc gta cag acc   2975
Ala Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr
                980                 985                 990

tgg gtc gac gag ccg gcg gac gac ggc cgg cgc cgg ttc acc gtg cac   3023
Trp Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His
            995                1000                1005

acc cgc acc ggc gac gcc ccg tgg acg ctg cac gcc gag ggg gtg ctg   3071
Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu
        1010                1015                1020

cgc ccc cat ggc acg gcc ctg ccc gat gcg gcc gac gcc gag tgg ccc   3119
Arg Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro
    1025                1030                1035

cca ccg ggc gcg gtg ccc gcg gac ggg ctg ccg ggt gtg tgg cgc cgg   3167
Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg
1040                1045                1050                1055

ggg gac cag gtc ttc gcc gag gcc gag gtg gac gga ccg gac ggt ttc   3215
Gly Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe
                1060                1065                1070

gtg gtg cac ccc gac ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac   3263
Val Val His Pro Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp
            1075                1080                1085

gga agc cgc cag ccg gcc gga tgg cgc gac ctg acg gtg cac gcg tcg   3311
Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser
        1090                1095                1100

gac gcc acc gta ctg cgc gcc tgc ctc acc cgg cgc acc gac gga gcc   3359
Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala
    1105                1110                1115
```

```
atg gga ttc gcc gcc ttc gac ggc gcc ggc ctg ccg gta ctc acc gcg   3407
Met Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala
1120                1125                1130                1135

gag gcg gtg acg ctg cgg gag gtg gcg tca ccg tcc ggc tcc gag gag   3455
Glu Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu
                1140                1145                1150

tcg gac ggc ctg cac cgg ttg gag tgg ctc gcg gtc gcc gag gcg gtc   3503
Ser Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val
            1155                1160                1165

tac gac ggt gac ctg ccc gag gga cat gtc ctg atc acc gcc gcc cac   3551
Tyr Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His
        1170                1175                1180

ccc gac gac ccc gag gac ata ccc acc cgc gcc cac acc cgc gcc acc   3599
Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr
    1185                1190                1195

cgc gtc ctg acc gcc ctg caa cac cac ctc acc acc acc gac cac acc   3647
Arg Val Leu Thr Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr
1200                1205                1210                1215

ctc atc gtc cac acc acc acc gac ccc gcc ggc gcc acc gtc acc ggc   3695
Leu Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly
                1220                1225                1230

ctc acc cgc acc gcc cag aac gaa cac ccc cac cgc atc cgc ctc atc   3743
Leu Thr Arg Thr Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile
            1235                1240                1245

gaa acc gac cac ccc cac acc ccc ctc ccc ctg gcc caa ctc gcc acc   3791
Glu Thr Asp His Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr
        1250                1255                1260

ctc gac cac ccc cac ctc cgc ctc acc cac cac acc ctc cac cac ccc   3839
Leu Asp His Pro His Leu Arg Leu Thr His His Thr Leu His His Pro
    1265                1270                1275

cac ctc acc ccc ctc cac acc acc acc cca ccc acc acc acc ccc ctc   3887
His Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu
1280                1285                1290                1295

aac ccc gaa cac gcc atc atc atc acc ggc ggc tcc ggc acc ctc gcc   3935
Asn Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala
                1300                1305                1310

ggc atc ctc gcc cgc cac ctg aac cac ccc cac acc tac ctc ctc tcc   3983
Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser
            1315                1320                1325

cgc acc cca ccc ccc gac gcc acc ccc ggc acc cac ctc ccc tgc gac   4031
Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp
        1330                1335                1340
```

gtc ggc gac ccc cac caa ctc gcc acc acc ctc acc cac atc ccc caa 4079
Val Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln
1345 1350 1355

ccc ctc acc gcc atc ttc cac acc gcc gcc acc ctc gac gac ggc atc 4127
Pro Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile
1360 1365 1370 1375

ctc cac gcc ctc acc ccc gac cgc ctc acc acc gtc ctc cac ccc aaa 4175
Leu His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys
1380 1385 1390

gcc aac gcc gcc tgg cac ctg cac cac ctc acc caa aac caa ccc ctc 4223
Ala Asn Ala Ala Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu
1395 1400 1405

acc cac ttc gtc ctc tac tcc agc gcc gcc gcc gtc ctc ggc agc ccc 4271
Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro
1410 1415 1420

gga caa gga aac tac gcc gcc gcc aac gcc ttc ctc gac gcc ctc gcc 4319
Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala
1425 1430 1435

acc cac cgc cac acc ctc ggc caa ccc gcc acc tcc atc gcc tgg ggc 4367
Thr His Arg His Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly
1440 1445 1450 1455

atg tgg cac acc acc agc acc ctc acc gga caa ctc gac gac gcc gac 4415
Met Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp
1460 1465 1470

cgg gac cgc atc cgc cgc ggc ggt ttc ctc ccg atc acg gac gac gag 4463
Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu
1475 1480 1485

ggc atggggatgc at 4478
Gly

<210> 17
<211> 1488
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 17
Ile Trp Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr
1 5 10 15

Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
20 25 30

```
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
          35                  40                  45

Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
      50                  55                  60

Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
 65                  70                  75                  80

Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
                 85                  90                  95

Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
            100                 105                 110

Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
        115                 120                 125

Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
    130                 135                 140

Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
145                 150                 155                 160

Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
                165                 170                 175

Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg
            180                 185                 190

Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr
        195                 200                 205

Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe
    210                 215                 220

Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr
225                 230                 235                 240

Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly
                245                 250                 255

Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu
            260                 265                 270

Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser
        275                 280                 285

Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe
    290                 295                 300

Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys
305                 310                 315                 320

Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly
                325                 330                 335
```

Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr
340 345 350

Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser
355 360 365

Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg
370 375 380

Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val
385 390 395 400

Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln
405 410 415

Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu
420 425 430

Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val
435 440 445

Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro
450 455 460

Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala
465 470 475 480

Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
485 490 495

Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn
500 505 510

Ala His Val Ile Leu Glu Ser Ala Pro Pro Thr Gln Pro Ala Asp Asn
515 520 525

Ala Val Ile Glu Arg Ala Pro Glu Trp Val Pro Leu Val Ile Ser Ala
530 535 540

Arg Thr Gln Ser Ala Leu Thr Glu His Glu Gly Arg Leu Arg Ala Tyr
545 550 555 560

Leu Ala Ala Ser Pro Gly Val Asp Met Arg Ala Val Ala Ser Thr Leu
565 570 575

Ala Met Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu Gly Asp
580 585 590

Asp Thr Val Thr Gly Thr Ala Val Ser Asp Pro Arg Ala Val Phe Val
595 600 605

Phe Pro Gly Gln Gly Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
610 615 620

Ala Ala Phe Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu
625 630 635 640

Leu Asp Val Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro
645 650 655

Ala Leu Phe Ala Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp
660 665 670

Gly Val Arg Pro Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala
675 680 685

Ala Ala Tyr Val Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu
690 695 700

Val Ser Ala Arg Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val
705 710 715 720

Met Val Ala Val Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly
725 730 735

Glu Gly Val Glu Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu
740 745 750

Ser Gly Asp Glu Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys
755 760 765

Trp Thr Arg Leu Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu
770 775 780

Pro Met Leu Glu Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg
785 790 795 800

Thr Pro Gln Val Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu
805 810 815

Tyr Trp Val Arg Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val
820 825 830

Ala Ser Tyr Glu Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser
835 840 845

Leu Ala Arg Leu Val Asp Gly Val Ala Met Leu His Gly Asp His Glu
850 855 860

Ile Gln Ala Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val
865 870 875 880

Thr Val Asp Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val
885 890 895

Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu
900 905 910

Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser
915 920 925

Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val
930 935 940

```
Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala
945                 950                 955                 960

Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala
                965                 970                 975

Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp
            980                 985                 990

Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr
        995                1000                1005

Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg
   1010                1015                1020

Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro
025                1030                1035                104

Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly
               1045                1050                1055

Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val
           1060                1065                1070

Val His Pro Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly
       1075                1080                1085

Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp
   1090                1095                1100

Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met
105                1110                1115                112

Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu
               1125                1130                1135

Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser
           1140                1145                1150

Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr
       1155                1160                1165

Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro
   1170                1175                1180

Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg
185                1190                1195                120

Val Leu Thr Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu
               1205                1210                1215

Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu
           1220                1225                1230

Thr Arg Thr Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu
       1235                1240                1245
```

Thr Asp His Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu
1250 1255 1260

Asp His Pro His Leu Arg Leu Thr His His Thr Leu His His Pro His
265 1270 1275 128

Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn
1285 1290 1295

Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly
1300 1305 1310

Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg
1315 1320 1325

Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val
1330 1335 1340

Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro
345 1350 1355 136

Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu
1365 1370 1375

His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala
1380 1385 1390

Asn Ala Ala Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr
1395 1400 1405

His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly
1410 1415 1420

Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr
425 1430 1435 144

His Arg His Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met
1445 1450 1455

Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg
1460 1465 1470

Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
1475 1480 1485

<210> 18
<211> 4571
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>
<221> CDS

<222> (9)..(4559)

<400> 18

agatctgg cag ctc gcc gaa gcg ctg ctg acg ctc gtc cgg gag agc acc 50
Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr
1 5 10

gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg gcg 98
Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
15 20 25 30

gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg cgc 146
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
35 40 45

aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg gtc 194
Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
50 55 60

ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac gaa 242
Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
65 70 75

ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg gcc 290
Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
80 85 90

ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg ctg 338
Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
95 100 105 110

ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca tcc 386
Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
115 120 125

ggc acc gac gcc atc acg gag ttc ccg acg gac cgc ggc tgg gac gtc 434
Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
130 135 140

gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc gtc 482
Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
145 150 155

cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg ttc 530
Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
160 165 170

ttc ggc atc agc ccg cgc gag gcc ctc gcg atg gac ccg cag cag cgg 578
Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg
175 180 185 190

gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc acc 626
Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr
195 200 205

ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc ttc 674
Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe
210 215 220

```
tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg acc      722
Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr
        225                 230                 235

ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac ggt      770
Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly
    240                 245                 250

ctg gag ggt ccg gcg gtc acg gtc gac acg gcg tgt tcg tcg tcg ctg      818
Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu
255                 260                 265                 270

gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc tcg      866
Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser
                275                 280                 285

ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc ttc      914
Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe
            290                 295                 300

gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg aag      962
Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys
        305                 310                 315

gcg ttc ggc gcg ggt gcg gac ggc acg agc ttc gcc gag ggt gcc ggt     1010
Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly
    320                 325                 330

gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac acc     1058
Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr
335                 340                 345                 350

gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc tcc     1106
Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser
                355                 360                 365

aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc cgg     1154
Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg
            370                 375                 380

cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc gtc     1202
Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val
        385                 390                 395

gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca cag     1250
Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln
    400                 405                 410

gcg gta ctg gcc acc tac gga cag gag cgc gcc acc ccc ctg ctg ctg     1298
Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu
415                 420                 425                 430

ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc gtc     1346
Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val
                435                 440                 445
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gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg ccg 1394
Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro
450 455 460

ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg gcc 1442
Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala
465 470 475

ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc gac 1490
Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
480 485 490

cgg cct agg cgg gcg ggc gtg tcg tcc ttc gga gtc agc ggc acc aac 1538
Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn
495 500 505 510

gcc cac gtc atc ctg gag agc gca ccc ccc gct cag ccc gcg gag gag 1586
Ala His Val Ile Leu Glu Ser Ala Pro Pro Ala Gln Pro Ala Glu Glu
515 520 525

gcg cag cct gtt gag acg ccg gtg gtg gcc tcg gat gtg ctg ccg ctg 1634
Ala Gln Pro Val Glu Thr Pro Val Val Ala Ser Asp Val Leu Pro Leu
530 535 540

gtg ata tcg gcc aag acc cag ccc gcc ctg acc gaa cac gaa gac cgg 1682
Val Ile Ser Ala Lys Thr Gln Pro Ala Leu Thr Glu His Glu Asp Arg
545 550 555

ctg cgc gcc tac ctg gcg gcg tcg ccc ggg gcg gat ata cgg gct gtg 1730
Leu Arg Ala Tyr Leu Ala Ala Ser Pro Gly Ala Asp Ile Arg Ala Val
560 565 570

gca tcg acg ctg gcg gtg aca cgg tcg gtg ttc gag cac cgc gcc gta 1778
Ala Ser Thr Leu Ala Val Thr Arg Ser Val Phe Glu His Arg Ala Val
575 580 585 590

ctc ctt gga gat gac acc gtc acc ggc acc gcg gtg acc gac ccc agg 1826
Leu Leu Gly Asp Asp Thr Val Thr Gly Thr Ala Val Thr Asp Pro Arg
595 600 605

atc gtg ttt gtc ttt ccc ggg cag ggg tgg cag tgg ctg ggg atg ggc 1874
Ile Val Phe Val Phe Pro Gly Gln Gly Trp Gln Trp Leu Gly Met Gly
610 615 620

agt gca ctg cgc gat tcg tcg gtg gtg ttc gcc gag cgg atg gcc gag 1922
Ser Ala Leu Arg Asp Ser Ser Val Val Phe Ala Glu Arg Met Ala Glu
625 630 635

tgt gcg gcg gcg ttg cgc gag ttc gtg gac tgg gat ctg ttc acg gtt 1970
Cys Ala Ala Ala Leu Arg Glu Phe Val Asp Trp Asp Leu Phe Thr Val
640 645 650

ctg gat gat ccg gcg gtg gtg gac cgg gtt gat gtg gtc cag ccc gct 2018
Leu Asp Asp Pro Ala Val Val Asp Arg Val Asp Val Val Gln Pro Ala
655 660 665 670

tcc tgg gcg atg atg gtt tcc ctg gcc gcg gtg tgg cag gcg gcc ggt 2066
Ser Trp Ala Met Met Val Ser Leu Ala Ala Val Trp Gln Ala Ala Gly
675 680 685

gtg cgg ccg gat gcg gtg atc ggc cat tcg cag ggt gag atc gcc gca 2114
Val Arg Pro Asp Ala Val Ile Gly His Ser Gln Gly Glu Ile Ala Ala
690 695 700

gct tgt gtg gcg ggt gcg gtg tca cta cgc gat gcc gcc cgg atc gtg 2162
Ala Cys Val Ala Gly Ala Val Ser Leu Arg Asp Ala Ala Arg Ile Val
705 710 715

acc ttg cgc agc cag gcg atc gcc cgg ggc ctg gcg ggc cgg ggc gcg 2210
Thr Leu Arg Ser Gln Ala Ile Ala Arg Gly Leu Ala Gly Arg Gly Ala
720 725 730

atg gca tcc gtc gcc ctg ccc gcg cag gat gtc gag ctg gtc gac ggg 2258
Met Ala Ser Val Ala Leu Pro Ala Gln Asp Val Glu Leu Val Asp Gly
735 740 745 750

gcc tgg atc gcc gcc cac aac ggg ccc gcc tcc acc gtg atc gcg ggc 2306
Ala Trp Ile Ala Ala His Asn Gly Pro Ala Ser Thr Val Ile Ala Gly
755 760 765

acc ccg gaa gcg gtc gac cat gtc ctc acc gct cat gag gca caa ggg 2354
Thr Pro Glu Ala Val Asp His Val Leu Thr Ala His Glu Ala Gln Gly
770 775 780

gtg cgg gtg cgg cgg atc acc gtc gac tat gcc tcg cac acc ccg cac 2402
Val Arg Val Arg Arg Ile Thr Val Asp Tyr Ala Ser His Thr Pro His
785 790 795

gtc gag ctg atc cgc gac gaa cta ctc gac atc act agc gac agc agc 2450
Val Glu Leu Ile Arg Asp Glu Leu Leu Asp Ile Thr Ser Asp Ser Ser
800 805 810

tcg cag acc ccg ctc gtg ccg tgg ctg tcg acc gtg gac ggc acc tgg 2498
Ser Gln Thr Pro Leu Val Pro Trp Leu Ser Thr Val Asp Gly Thr Trp
815 820 825 830

gtc gac agc ccg ctg gac ggg gag tac tgg tac cgg aac ctg cgt gaa 2546
Val Asp Ser Pro Leu Asp Gly Glu Tyr Trp Tyr Arg Asn Leu Arg Glu
835 840 845

ccg gtc ggt ttc cac ccc gcc gtc agc cag ttg cag gcc cag ggc gac 2594
Pro Val Gly Phe His Pro Ala Val Ser Gln Leu Gln Ala Gln Gly Asp
850 855 860

acc gtg ttc gtc gag gtc agc gcc agc ccg gtg ttg ttg cag gcg atg 2642
Thr Val Phe Val Glu Val Ser Ala Ser Pro Val Leu Leu Gln Ala Met
865 870 875

gac gac gat gtc gtc acg gtt gcc acg ctg cgt cgt gac gac ggc gac 2690
Asp Asp Asp Val Val Thr Val Ala Thr Leu Arg Arg Asp Asp Gly Asp
880 885 890

gcc acc cgg atg ctc acc gcc ctg gca cag gcc tat gtc cac ggc gtc 2738
Ala Thr Arg Met Leu Thr Ala Leu Ala Gln Ala Tyr Val His Gly Val
895 900 905 910

acc gtc gac tgg ccc gcc atc ctc ggc acc acc aca acc cgg gta ctg 2786
Thr Val Asp Trp Pro Ala Ile Leu Gly Thr Thr Thr Thr Arg Val Leu
915 920 925

gac ctt ccg acc tac gcc ttc caa cac cag cgg tac tgg ctc gag tcg 2834
Asp Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser
930 935 940

gca cgc ccg gcc gca tcc gac gcg ggc cac ccc gtg ctg ggc tcc ggt 2882
Ala Arg Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly
945 950 955

atc gcc ctc gcc ggg tcg ccg ggc cgg gtg ttc acg ggt tcc gtg ccg 2930
Ile Ala Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro
960 965 970

acc ggt gcg gac cgc gcg gtg ttc gtc gcc gag ctg gcg ctg gcc gcc 2978
Thr Gly Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala
975 980 985 990

gcg gac gcg gtc gac tgc gcc acg gtc gag cgg ctc gac atc gcc tcc 3026
Ala Asp Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser
995 1000 1005

gtg ccc ggc cgg ccg ggc cat ggc cgg acg acc gta cag acc tgg gtc 3074
Val Pro Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val
1010 1015 1020

gac gag ccg gcg gac gac ggc cgg cgc cgg ttc acc gtg cac acc cgc 3122
Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg
1025 1030 1035

acc ggc gac gcc ccg tgg acg ctg cac gcc gag ggg gtg ctg cgc ccc 3170
Thr Gly Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro
1040 1045 1050

cat ggc acg gcc ctg ccc gat gcg gcc gac gcc gag tgg ccc cca ccg 3218
His Gly Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro
1055 1060 1065 1070

ggc gcg gtg ccc gcg gac ggg ctg ccg ggt gtg tgg cgc cgg ggg gac 3266
Gly Ala Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp
1075 1080 1085

cag gtc ttc gcc gag gcc gag gtg gac gga ccg gac ggt ttc gtg gtg 3314
Gln Val Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val
1090 1095 1100

cac ccc gac ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac gga agc 3362
His Pro Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser
1105 1110 1115

cgc cag ccg gcc gga tgg cgc gac ctg acg gtg cac gcg tcg gac gcc 3410
Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala
1120 1125 1130

acc gta ctg cgc gcc tgc ctc acc cgg cgc acc gac gga gcc atg gga 3458
Thr Val Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly
1135 1140 1145 1150

ttc gcc gcc ttc gac ggc gcc ggc ctg ccg gta ctc acc gcg gag gcg 3506
Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala
1155 1160 1165

gtg acg ctg cgg gag gtg gcg tca ccg tcc ggc tcc gag gag tcg gac 3554
Val Thr Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp
1170 1175 1180

ggc ctg cac cgg ttg gag tgg ctc gcg gtc gcc gag gcg gtc tac gac 3602
Gly Leu His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp
1185 1190 1195

ggt gac ctg ccc gag gga cat gtc ctg atc acc gcc gcc cac ccc gac 3650
Gly Asp Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp
1200 1205 1210

gac ccc gag gac ata ccc acc cgc gcc cac acc cgc gcc acc cgc gtc 3698
Asp Pro Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val
1215 1220 1225 1230

ctg acc gcc ctg caa cac cac ctc acc acc acc gac cac acc ctc atc 3746
Leu Thr Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile
1235 1240 1245

gtc cac acc acc acc gac ccc gcc ggc gcc acc gtc acc ggc ctc acc 3794
Val His Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr
1250 1255 1260

cgc acc gcc cag aac gaa cac ccc cac cgc atc cgc ctc atc gaa acc 3842
Arg Thr Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr
1265 1270 1275

gac cac ccc cac acc ccc ctc ccc ctg gcc caa ctc gcc acc ctc gac 3890
Asp His Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp
1280 1285 1290

cac ccc cac ctc cgc ctc acc cac cac acc ctc cac cac ccc cac ctc 3938
His Pro His Leu Arg Leu Thr His His Thr Leu His His Pro His Leu
1295 1300 1305 1310

acc ccc ctc cac acc acc acc cca ccc acc acc acc ccc ctc aac ccc 3986
Thr Pro Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro
1315 1320 1325

gaa cac gcc atc atc atc acc ggc ggc tcc ggc acc ctc gcc ggc atc 4034
Glu His Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile
1330 1335 1340

ctc gcc cgc cac ctg aac cac ccc cac acc tac ctc ctc tcc cgc acc 4082
Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr
1345 1350 1355

cca ccc ccc gac gcc acc ccc ggc acc cac ctc ccc tgc gac gtc ggc 4130
Pro Pro Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly
1360 1365 1370

gac ccc cac caa ctc gcc acc acc ctc acc cac atc ccc caa ccc ctc 4178
Asp Pro His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu
1375 1380 1385 1390

acc gcc atc ttc cac acc gcc gcc acc ctc gac gac ggc atc ctc cac 4226
Thr Ala Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His
1395 1400 1405

gcc ctc acc ccc gac cgc ctc acc acc gtc ctc cac ccc aaa gcc aac 4274
Ala Leu Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn
1410 1415 1420

gcc gcc tgg cac ctg cac cac ctc acc caa aac caa ccc ctc acc cac 4322
Ala Ala Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His
1425 1430 1435

ttc gtc ctc tac tcc agc gcc gcc gcc gtc ctc ggc agc ccc gga caa 4370
Phe Val Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln
1440 1445 1450

gga aac tac gcc gcc gcc aac gcc ttc ctc gac gcc ctc gcc acc cac 4418
Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His
1455 1460 1465 1470

cgc cac acc ctc ggc caa ccc gcc acc tcc atc gcc tgg ggc atg tgg 4466
Arg His Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp
1475 1480 1485

cac acc acc agc acc ctc acc gga caa ctc gac gac gcc gac cgg gac 4514
His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp
1490 1495 1500

cgc atc cgc cgc ggc ggt ttc ctc ccg atc acg gac gac gag ggc 4559
Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
1505 1510 1515

atggggatgc at 4571

<210> 19
<211> 1517
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 19

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Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
  1               5                  10                  15

Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
            20                  25                  30

Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
        35                  40                  45

Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
    50                  55                  60

Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
65                  70                  75                  80

Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
                85                  90                  95

His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
            100                 105                 110

Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser Gly Thr
        115                 120                 125

Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val Asp Ala
    130                 135                 140

Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val Arg His
145                 150                 155                 160

Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly
                165                 170                 175

Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Val Leu
            180                 185                 190

Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp
        195                 200                 205

Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe Ser Tyr
    210                 215                 220

Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr Gly Ser
225                 230                 235                 240

Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu
                245                 250                 255

Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
            260                 265                 270

Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
        275                 280                 285

Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
    290                 295                 300
```

Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
305 310 315 320

Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
325 330 335

Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
340 345 350

Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
355 360 365

Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
370 375 380

Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
385 390 395 400

His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
405 410 415

Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
420 425 430

Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
435 440 445

Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
450 455 460

Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
465 470 475 480

Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
485 490 495

Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
500 505 510

Val Ile Leu Glu Ser Ala Pro Pro Ala Gln Pro Ala Glu Glu Ala Gln
515 520 525

Pro Val Glu Thr Pro Val Val Ala Ser Asp Val Leu Pro Leu Val Ile
530 535 540

Ser Ala Lys Thr Gln Pro Ala Leu Thr Glu His Glu Asp Arg Leu Arg
545 550 555 560

Ala Tyr Leu Ala Ala Ser Pro Gly Ala Asp Ile Arg Ala Val Ala Ser
565 570 575

Thr Leu Ala Val Thr Arg Ser Val Phe Glu His Arg Ala Val Leu Leu
580 585 590

Gly Asp Asp Thr Val Thr Gly Thr Ala Val Thr Asp Pro Arg Ile Val
595 600 605

```
Phe Val Phe Pro Gly Gln Gly Trp Gln Trp Leu Gly Met Gly Ser Ala
    610                 615                 620

Leu Arg Asp Ser Ser Val Val Phe Ala Glu Arg Met Ala Glu Cys Ala
625                 630                 635                 640

Ala Ala Leu Arg Glu Phe Val Asp Trp Asp Leu Phe Thr Val Leu Asp
                645                 650                 655

Asp Pro Ala Val Val Asp Arg Val Asp Val Val Gln Pro Ala Ser Trp
            660                 665                 670

Ala Met Met Val Ser Leu Ala Ala Val Trp Gln Ala Ala Gly Val Arg
        675                 680                 685

Pro Asp Ala Val Ile Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys
    690                 695                 700

Val Ala Gly Ala Val Ser Leu Arg Asp Ala Ala Arg Ile Val Thr Leu
705                 710                 715                 720

Arg Ser Gln Ala Ile Ala Arg Gly Leu Ala Gly Arg Gly Ala Met Ala
                725                 730                 735

Ser Val Ala Leu Pro Ala Gln Asp Val Glu Leu Val Asp Gly Ala Trp
            740                 745                 750

Ile Ala Ala His Asn Gly Pro Ala Ser Thr Val Ile Ala Gly Thr Pro
        755                 760                 765

Glu Ala Val Asp His Val Leu Thr Ala His Glu Ala Gln Gly Val Arg
    770                 775                 780

Val Arg Arg Ile Thr Val Asp Tyr Ala Ser His Thr Pro His Val Glu
785                 790                 795                 800

Leu Ile Arg Asp Glu Leu Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln
                805                 810                 815

Thr Pro Leu Val Pro Trp Leu Ser Thr Val Asp Gly Thr Trp Val Asp
            820                 825                 830

Ser Pro Leu Asp Gly Glu Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val
        835                 840                 845

Gly Phe His Pro Ala Val Ser Gln Leu Gln Ala Gln Gly Asp Thr Val
    850                 855                 860

Phe Val Glu Val Ser Ala Ser Pro Val Leu Leu Gln Ala Met Asp Asp
865                 870                 875                 880

Asp Val Val Thr Val Ala Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr
                885                 890                 895

Arg Met Leu Thr Ala Leu Ala Gln Ala Tyr Val His Gly Val Thr Val
            900                 905                 910
```

Asp Trp Pro Ala Ile Leu Gly Thr Thr Thr Thr Arg Val Leu Asp Leu
915 920 925

Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg
930 935 940

Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala
945 950 955 960

Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly
965 970 975

Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Ala Asp
980 985 990

Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro
995 1000 1005

Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu
1010 1015 1020

Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly
025 1030 1035 1040

Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly
1045 1050 1055

Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala
1060 1065 1070

Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val
1075 1080 1085

Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro
1090 1095 1100

Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln
105 1110 1115 1120

Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val
1125 1130 1135

Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala
1140 1145 1150

Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr
1155 1160 1165

Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu
1170 1175 1180

His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp
185 1190 1195 1200

Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro
1205 1210 1215

Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr
1220 1225 1230

Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His
1235 1240 1245

Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr
1250 1255 1260

Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His
265 1270 1275 1280

Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro
1285 1290 1295

His Leu Arg Leu Thr His His Thr Leu His His Pro His Leu Thr Pro
1300 1305 1310

Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His
1315 1320 1325

Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala
1330 1335 1340

Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro
345 1350 1355 1360

Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro
1365 1370 1375

His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala
1380 1385 1390

Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu
1395 1400 1405

Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala
1410 1415 1420

Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val
425 1430 1435 1440

Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn
1445 1450 1455

Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His
1460 1465 1470

Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr
1475 1480 1485

Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile
1490 1495 1500

Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
505 1510 1515

<210> 20
<211> 4466
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (9)..(4454)

<400> 20
agatctgg cag ctc gcc gaa gcg ctg ctg acg ctc gtc cgg gag agc acc 50
Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr
1 5 10

gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg gcg 98
Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
15 20 25 30

gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg cgc 146
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
35 40 45

aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg gtc 194
Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
50 55 60

ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac gaa 242
Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
65 70 75

ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg gcc 290
Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
80 85 90

ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg ctg 338
Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
95 100 105 110

ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca tcc 386
Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
115 120 125

ggc acc gac gcc atc acg gag ttc ccg acg gac cgc ggc tgg gac gtc 434
Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
130 135 140

gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc gtc 482
Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
145 150 155

cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg ttc 530
Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
160 165 170

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ttc ggc atc agc ccg cgc gag gcc ctc gcg atg gac ccg cag cag cgg     578
Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg
175                 180                 185                 190

gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc acc     626
Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr
                195                 200                 205

ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc ttc     674
Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe
            210                 215                 220

tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg acc     722
Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr
        225                 230                 235

ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac ggt     770
Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly
    240                 245                 250

ctg gag ggt ccg gcg gtc acg gtc gac acg gcg tgt tcg tcg tcg ctg     818
Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu
255                 260                 265                 270

gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc tcg     866
Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser
                275                 280                 285

ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc ttc     914
Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe
            290                 295                 300

gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg aag     962
Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys
        305                 310                 315

gcg ttc ggc gcg ggt gcg gac ggc acg agc ttc gcc gag ggt gcc ggt    1010
Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly
    320                 325                 330

gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac acc    1058
Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr
335                 340                 345                 350

gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc tcc    1106
Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser
                355                 360                 365

aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc cgg    1154
Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg
            370                 375                 380

cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc gtc    1202
Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val
        385                 390                 395
```

```
gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca cag   1250
Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln
    400                 405                 410

gcg gta ctg gcc acc tac gga cag gag cgc gcc acc ccc ctg ctg ctg   1298
Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu
415                 420                 425                 430

ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc gtc   1346
Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val
                435                 440                 445

gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg ccg   1394
Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro
            450                 455                 460

ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg gcc   1442
Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala
        465                 470                 475

ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc gac   1490
Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
    480                 485                 490

cgg cca cgg cgt gcc gcc gtc tcc tcg ttc ggg gtg agc ggc acc aac   1538
Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn
495                 500                 505                 510

gcc cac gtc atc ctg gag gcc gga ccg gta acg gag acg ccc gcg gca   1586
Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala
                515                 520                 525

tcg cct tcc ggt gac ctt ccc ctg ctg gtg tcg gca cgc tca ccg gaa   1634
Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
            530                 535                 540

gcg ctc gac gag cag atc cgc cga ctg cgc gcc tac ctg gac acc acc   1682
Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr
        545                 550                 555

ccg gac gtc gac cgg gtg gcc gtg gca cag acg ctg gcc cgg cgc aca   1730
Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
    560                 565                 570

cac ttc gcc cac cgc gcc gtg ctg ctc ggt gac acc gtc atc acc aca   1778
His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr
575                 580                 585                 590

ccc ccc gcg gac cgg ccc gac gaa ctc gtc ttc gtc tac tcc ggc cag   1826
Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
                595                 600                 605

ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gcc gcg ttc ccc   1874
Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro
            610                 615                 620
```

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gtc ttc gcg cgg atc cat cag cag gtg tgg gac ctg ctc gat gtg ccc   1922
Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro
        625                 630                 635

gat ctg gag gtg aac gag acc ggt tac gcc cag ccg gcc ctg ttc gca   1970
Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala
    640                 645                 650

atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga ccg   2018
Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro
655                 660                 665                 670

gac gcg gtg atc ggc cat tcg gtg ggt gag ctt gcg gct gcg tat gtg   2066
Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val
                675                 680                 685

tcc ggg gtg tgg tcg ttg gag gat gcc tgc act ttg gtg tcg gcg cgg   2114
Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg
            690                 695                 700

gct cgt ctg atg cag gct ctg ccc gcg ggt ggg gtg atg gtc gct gtc   2162
Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val
        705                 710                 715

ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg gag   2210
Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu
    720                 725                 730

atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat gag   2258
Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu
735                 740                 745                 750

gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg aag tgg acg cgg ctg   2306
Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu
                755                 760                 765

gcg acc agc cac gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg gag   2354
Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu
            770                 775                 780

gag ttc cgg gcg gtc gcc gaa ggc ctg acc tac cgg acg ccg cag gtc   2402
Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val
        785                 790                 795

tcc atg gcc gtt ggt gat cag gtg acc acc gct gag tac tgg gtg cgg   2450
Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg
    800                 805                 810

cag gtc cgg gac acg gtc cgg ttc ggc gag cag gtg gcc tcg tac gag   2498
Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu
815                 820                 825                 830

gac gcc gtg ttc gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc ctg   2546
Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu
                835                 840                 845
```

gtc gac ggt gtc gcg atg ctg cac ggc gac cac gaa atc cag gcc gcg 2594
Val Asp Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala
850 855 860

atc ggc gcc ctg gcc cac ctg tat gtc aac ggc gtc acg gtc gac tgg 2642
Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp
865 870 875

ccc gcg ctc ctg ggc gat gct ccg gca aca cgg gtg ctg gac ctt ccg 2690
Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro
880 885 890

aca tac gcc ttc cag cac cag cgc tac tgg ctc gag tcg gca cgc ccg 2738
Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro
895 900 905 910

gcc gca tcc gac gcg ggc cac ccc gtg ctg ggc tcc ggt atc gcc ctc 2786
Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu
915 920 925

gcc ggg tcg ccg ggc cgg gtg ttc acg ggt tcc gtg ccg acc ggt gcg 2834
Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala
930 935 940

gac cgc gcg gtg ttc gtc gcc gag ctg gcg ctg gcc gcc gcg gac gcg 2882
Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala
945 950 955

gtc gac tgc gcc acg gtc gag cgg ctc gac atc gcc tcc gtg ccc ggc 2930
Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly
960 965 970

cgg ccg ggc cat ggc cgg acg acc gta cag acc tgg gtc gac gag ccg 2978
Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro
975 980 985 990

gcg gac gac ggc cgg cgc cgg ttc acc gtg cac acc cgc acc ggc gac 3026
Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp
995 1000 1005

gcc ccg tgg acg ctg cac gcc gag ggg gtg ctg cgc ccc cat ggc acg 3074
Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly Thr
1010 1015 1020

gcc ctg ccc gat gcg gcc gac gcc gag tgg ccc cca ccg ggc gcg gtg 3122
Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val
1025 1030 1035

ccc gcg gac ggg ctg ccg ggt gtg tgg cgc cgg ggg gac cag gtc ttc 3170
Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe
1040 1045 1050

gcc gag gcc gag gtg gac gga ccg gac ggt ttc gtg gtg cac ccc gac 3218
Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro Asp
1055 1060 1065 1070

```
ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac gga agc cgc cag ccg   3266
Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro
                1075                1080                1085

gcc gga tgg cgc gac ctg acg gtg cac gcg tcg gac gcc acc gta ctg   3314
Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val Leu
            1090                1095                1100

cgc gcc tgc ctc acc cgg cgc acc gac gga gcc atg gga ttc gcc gcc   3362
Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala
        1105                1110                1115

ttc gac ggc gcc ggc ctg ccg gta ctc acc gcg gag gcg gtg acg ctg   3410
Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu
    1120                1125                1130

cgg gag gtg gcg tca ccg tcc ggc tcc gag gag tcg gac ggc ctg cac   3458
Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His
1135                1140                1145                1150

cgg ttg gag tgg ctc gcg gtc gcc gag gcg gtc tac gac ggt gac ctg   3506
Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu
                1155                1160                1165

ccc gag gga cat gtc ctg atc acc gcc gcc cac ccc gac gac ccc gag   3554
Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu
            1170                1175                1180

gac ata ccc acc cgc gcc cac acc cgc gcc acc cgc gtc ctg acc gcc   3602
Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala
        1185                1190                1195

ctg caa cac cac ctc acc acc acc gac cac acc ctc atc gtc cac acc   3650
Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His Thr
    1200                1205                1210

acc acc gac ccc gcc ggc gcc acc gtc acc ggc ctc acc cgc acc gcc   3698
Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala
1215                1220                1225                1230

cag aac gaa cac ccc cac cgc atc cgc ctc atc gaa acc gac cac ccc   3746
Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His Pro
                1235                1240                1245

cac acc ccc ctc ccc ctg gcc caa ctc gcc acc ctc gac cac ccc cac   3794
His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro His
            1250                1255                1260

ctc cgc ctc acc cac cac acc ctc cac cac ccc cac ctc acc ccc ctc   3842
Leu Arg Leu Thr His His Thr Leu His His Pro His Leu Thr Pro Leu
        1265                1270                1275

cac acc acc acc cca ccc acc acc acc ccc ctc aac ccc gaa cac gcc   3890
His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala
    1280                1285                1290
```

```
atc atc atc acc ggc ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc   3938
Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg
1295                1300                1305                1310

cac ctg aac cac ccc cac acc tac ctc ctc tcc cgc acc cca ccc ccc   3986
His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro
                1315                1320                1325

gac gcc acc ccc ggc acc cac ctc ccc tgc gac gtc ggc gac ccc cac   4034
Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro His
            1330                1335                1340

caa ctc gcc acc acc ctc acc cac atc ccc caa ccc ctc acc gcc atc   4082
Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile
        1345                1350                1355

ttc cac acc gcc gcc acc ctc gac gac ggc atc ctc cac gcc ctc acc   4130
Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr
    1360                1365                1370

ccc gac cgc ctc acc acc gtc ctc cac ccc aaa gcc aac gcc gcc tgg   4178
Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp
1375                1380                1385                1390

cac ctg cac cac ctc acc caa aac caa ccc ctc acc cac ttc gtc ctc   4226
His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu
                1395                1400                1405

tac tcc agc gcc gcc gcc gtc ctc ggc agc ccc gga caa gga aac tac   4274
Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr
            1410                1415                1420

gcc gcc gcc aac gcc ttc ctc gac gcc ctc gcc acc cac cgc cac acc   4322
Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr
        1425                1430                1435

ctc ggc caa ccc gcc acc tcc atc gcc tgg ggc atg tgg cac acc acc   4370
Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr
    1440                1445                1450

agc acc ctc acc gga caa ctc gac gac gcc gac cgg gac cgc atc cgc   4418
Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg
1455                1460                1465                1470

cgc ggc ggt ttc ctc ccg atc acg gac gac gag ggc atggggatgc at     4466
Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
                1475                1480
```

<210> 21
<211> 1482
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 21

Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
1 5 10 15

Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
20 25 30

Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
35 40 45

Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
50 55 60

Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
65 70 75 80

Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
85 90 95

His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
100 105 110

Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser Gly Thr
115 120 125

Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val Asp Ala
130 135 140

Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val Arg His
145 150 155 160

Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly
165 170 175

Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Val Leu
180 185 190

Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp
195 200 205

Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe Ser Tyr
210 215 220

Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr Gly Ser
225 230 235 240

Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu
245 250 255

Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
260 265 270

Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
275 280 285

Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
290 295 300

Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
305 310 315 320

Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
325 330 335

Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
340 345 350

Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
355 360 365

Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
370 375 380

Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
385 390 395 400

His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
405 410 415

Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
420 425 430

Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
435 440 445

Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
450 455 460

Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
465 470 475 480

Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
485 490 495

Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
500 505 510

Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala Ser Pro
515 520 525

Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu
530 535 540

Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr Pro Asp
545 550 555 560

Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr His Phe
565 570 575

Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr Pro Pro
580 585 590

Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr
595 600 605

```
Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro Val Phe
    610                 615                 620

Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu
625                 630                 635                 640

Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln
                645                 650                 655

Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala
            660                 665                 670

Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly
        675                 680                 685

Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg
    690                 695                 700

Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val
705                 710                 715                 720

Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala
                725                 730                 735

Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala
            740                 745                 750

Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr
        755                 760                 765

Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe
    770                 775                 780

Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met
785                 790                 795                 800

Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val
                805                 810                 815

Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala
            820                 825                 830

Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp
        835                 840                 845

Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly
    850                 855                 860

Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala
865                 870                 875                 880

Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr
                885                 890                 895

Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala
            900                 905                 910
```

```
Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly
        915                 920                 925

Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg
    930                 935                 940

Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Val Asp
945                 950                 955                 960

Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro
                965                 970                 975

Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp
            980                 985                 990

Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro
        995                 1000                1005

Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu
    1010                1015                1020

Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala
025                 1030                1035                1040

Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu
                1045                1050                1055

Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro Asp Leu Leu
            1060                1065                1070

Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly
        1075                1080                1085

Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val Leu Arg Ala
    1090                1095                1100

Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp
105                 1110                1115                1120

Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu
                1125                1130                1135

Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu
            1140                1145                1150

Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu
        1155                1160                1165

Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile
    1170                1175                1180

Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln
185                 1190                1195                1200

His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His Thr Thr Thr
                1205                1210                1215
```

```
Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn
            1220                1225                1230

Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His Pro His Thr
        1235                1240                1245

Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro His Leu Arg
    1250                1255                1260

Leu Thr His His Thr Leu His His Pro His Leu Thr Pro Leu His Thr
265                 1270                1275                1280

Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile
                1285                1290                1295

Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu
            1300                1305                1310

Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala
        1315                1320                1325

Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu
    1330                1335                1340

Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile Phe His
345                 1350                1355                1360

Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp
                1365                1370                1375

Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp His Leu
            1380                1385                1390

His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser
        1395                1400                1405

Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala
    1410                1415                1420

Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Leu Gly
425                 1430                1435                1440

Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr
                1445                1450                1455

Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly
            1460                1465                1470

Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
        1475                1480
```

<210> 22
<211> 4547
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (9)..(4535)

<400> 22

```
agatctgg cag ctc gcc gaa gcg ctg ctg acg ctc gtc cgg gag agc acc  50
         Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr
           1               5                  10

gcc gcc gtg ctc ggc cac gtg ggt ggc gag gac atc ccc gcg acg gcg   98
Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala
 15                  20                  25                  30

gcg ttc aag gac ctc ggc atc gac tcg ctc acc gcg gtc cag ctg cgc   146
Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg
                35                  40                  45

aac gcc ctc acc gag gcg acc ggt gtg cgg ctg aac gcc acg gcg gtc   194
Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val
            50                  55                  60

ttc gac ttc ccg acc ccg cac gtg ctc gcc ggg aag ctc ggc gac gaa   242
Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu
         65                  70                  75

ctg acc ggc acc cgc gcg ccc gtc gtg ccc cgg acc gcg gcc acg gcc   290
Leu Thr Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala
     80                  85                  90

ggt gcg cac gac gag ccg ctg gcg atc gtg gga atg gcc tgc cgg ctg   338
Gly Ala His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu
 95                  100                 105                 110

ccc ggc ggg gtc gcg tca ccc gag gag ctg tgg cac ctc gtg gca tcc   386
Pro Gly Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser
                115                 120                 125

ggc acc gac gcc atc acg gag ttc ccg acg gac cgc ggc tgg gac gtc   434
Gly Thr Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val
            130                 135                 140

gac gcg atc tac gac ccg gac ccc gac gcg atc ggc aag acc ttc gtc   482
Asp Ala Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val
        145                 150                 155

cgg cac ggt ggc ttc ctc acc ggc gcg aca ggc ttc gac gcg gcg ttc   530
Arg His Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe
    160                 165                 170

ttc ggc atc agc ccg cgc gag gcc ctc gcg atg gac ccg cag cag cgg   578
Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg
175                 180                 185                 190
```

```
gtg ctc ctg gag acg tcg tgg gag gcg ttc gaa agc gcc ggc atc acc   626
Val Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr
                195                 200                 205

ccg gac tcg acc cgc ggc agc gac acc ggc gtg ttc gtc ggc gcc ttc   674
Pro Asp Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe
            210                 215                 220

tcc tac ggt tac ggc acc ggt gcg gac acc gac ggc ttc ggc gcg acc   722
Ser Tyr Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr
        225                 230                 235

ggc tcg cag acc agt gtg ctc tcc ggc cgg ctg tcg tac ttc tac ggt   770
Gly Ser Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly
    240                 245                 250

ctg gag ggt ccg gcg gtc acg gtc gac acg gcg tgt tcg tcg tcg ctg   818
Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu
255                 260                 265                 270

gtg gcg ctg cac cag gcc ggg cag tcg ctg cgc tcc ggc gaa tgc tcg   866
Val Ala Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser
                275                 280                 285

ctc gcc ctg gtc ggc ggc gtc acg gtg atg gcg tct ccc ggc ggc ttc   914
Leu Ala Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe
            290                 295                 300

gtg gag ttc tcc cgg cag cgc ggc ctc gcg ccg gac ggc cgg gcg aag   962
Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys
        305                 310                 315

gcg ttc ggc gcg ggt gcg gac ggc acg agc ttc gcc gag ggt gcc ggt   1010
Ala Phe Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly
    320                 325                 330

gtg ctg atc gtc gag agg ctc tcc gac gcc gaa cgc aac ggt cac acc   1058
Val Leu Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr
335                 340                 345                 350

gtc ctg gcg gtc gtc cgt ggt tcg gcg gtc aac cag gat ggt gcc tcc   1106
Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser
                355                 360                 365

aac ggg ctg tcg gcg ccg aac ggg ccg tcg cag gag cgg gtg atc cgg   1154
Asn Gly Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg
            370                 375                 380

cag gcc ctg gcc aac gcc ggg ctc acc ccg gcg gac gtg gac gcc gtc   1202
Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val
        385                 390                 395

gag gcc cac ggc acc ggc acc agg ctg ggc gac ccc atc gag gca cag   1250
Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln
    400                 405                 410
```

```
gcg gta ctg gcc acc tac gga cag gag cgc gcc acc ccc ctg ctg ctg     1298
Ala Val Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu
415                 420                 425                 430

ggc tcg ctg aag tcc aac atc ggc cac gcc cag gcc gcg tcc ggc gtc     1346
Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val
                435                 440                 445

gcc ggc atc atc aag atg gtg cag gcc ctc cgg cac ggg gag ctg ccg     1394
Ala Gly Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro
            450                 455                 460

ccg acg ctg cac gcc gac gag ccg tcg ccg cac gtc gac tgg acg gcc     1442
Pro Thr Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala
        465                 470                 475

ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc gac     1490
Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
    480                 485                 490

cgg cca cgg cgt gcc gcc gtc tcc tcg ttc ggg gtg agc ggc acc aac     1538
Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn
495                 500                 505                 510

gcc cac gtc atc ctg gag gcc gga ccg gta acg gag acg ccc gcg gca     1586
Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala
                515                 520                 525

tcg cct tcc ggt gac ctt ccc ctg ctg gtg tcg gca cgc tca ccg gaa     1634
Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
            530                 535                 540

gcg ctc gac gag cag atc cgc cga ctg cgc gcc tac ctg gac acc acc     1682
Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr
        545                 550                 555

ccg gac gtc gac cgg gtg gcc gtg gca cag acg ctg gcc cgg cgc aca     1730
Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
    560                 565                 570

cac ttc gcc cac cgc gcc gtg ctg ctc ggt gac acc gtc atc acc aca     1778
His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr
575                 580                 585                 590

ccc ccc gcg gac cgg ccc gac gaa ctc gtc ttc gtc tac tcc ggc cag     1826
Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
                595                 600                 605

ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gat tcg tcg gtg     1874
Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val
            610                 615                 620

gtg ttc gcc gag cgg atg gcc gag tgt gcg gcg gcg ttg cgc gag ttc     1922
Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe
        625                 630                 635
```

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gtg gac tgg gat ctg ttc acg gtt ctg gat gat ccg gcg gtg gtg gac     1970
Val Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp
    640                 645                 650

cgg gtt gat gtg gtc cag ccc gct tcc tgg gcg atg atg gtt tcc ctg     2018
Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu
655                 660                 665                 670

gcc gcg gtg tgg cag gcg gcc ggt gtg cgg ccg gat gcg gtg atc ggc     2066
Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly
                675                 680                 685

cat tcg cag ggt gag atc gcc gca gct tgt gtg gcg ggt gcg gtg tca     2114
His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser
            690                 695                 700

cta cgc gat gcc gcc cgg atc gtg acc ttg cgc agc cag gcg atc gcc     2162
Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala
        705                 710                 715

cgg ggc ctg gcg ggc cgg ggc gcg atg gca tcc gtc gcc ctg ccc gcg     2210
Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala
    720                 725                 730

cag gat gtc gag ctg gtc gac ggg gcc tgg atc gcc gcc cac aac ggg     2258
Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly
735                 740                 745                 750

ccc gcc tcc acc gtg atc gcg ggc acc ccg gaa gcg gtc gac cat gtc     2306
Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val
                755                 760                 765

ctc acc gct cat gag gca caa ggg gtg cgg gtg cgg cgg atc acc gtc     2354
Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val
            770                 775                 780

gac tat gcc tcg cac acc ccg cac gtc gag ctg atc cgc gac gaa cta     2402
Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu
        785                 790                 795

ctc gac atc act agc gac agc agc tcg cag acc ccg ctc gtg ccg tgg     2450
Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp
    800                 805                 810

ctg tcg acc gtg gac ggc acc tgg gtc gac agc ccg ctg gac ggg gag     2498
Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu
815                 820                 825                 830

tac tgg tac cgg aac ctg cgt gaa ccg gtc ggt ttc cac ccc gcc gtc     2546
Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val
                835                 840                 845

agc cag ttg cag gcc cag ggc gac acc gtg ttc gtc gag gtc agc gcc     2594
Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala
            850                 855                 860
```

```
agc ccg gtg ttg ttg cag gcg atg gac gac gat gtc gtc acg gtt gcc   2642
Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala
        865                 870                 875

acg ctg cgt cgt gac gac ggc gac gcc acc cgg atg ctc acc gcc ctg   2690
Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu
    880                 885                 890

gca cag gcc tat gtc cac ggc gtc acc gtc gac tgg ccc gcc atc ctc   2738
Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu
895                 900                 905                 910

ggc acc acc aca acc cgg gta ctg gac ctt ccg acc tac gcc ttc caa   2786
Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
                915                 920                 925

cac cag cgg tac tgg ctc gag tcg gca cgc ccg gcc gca tcc gac gcg   2834
His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala
            930                 935                 940

ggc cac ccc gtg ctg ggc tcc ggt atc gcc ctc gcc ggg tcg ccg ggc   2882
Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly
        945                 950                 955

cgg gtg ttc acg ggt tcc gtg ccg acc ggt gcg gac cgc gcg gtg ttc   2930
Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg Ala Val Phe
    960                 965                 970

gtc gcc gag ctg gcg ctg gcc gcc gcg gac gcg gtc gac tgc gcc acg   2978
Val Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Val Asp Cys Ala Thr
975                 980                 985                 990

gtc gag cgg ctc gac atc gcc tcc gtg ccc ggc cgg ccg ggc cat ggc   3026
Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro Gly His Gly
                995                1000                1005

cgg acg acc gta cag acc tgg gtc gac gag ccg gcg gac gac ggc cgg   3074
Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp Asp Gly Arg
            1010                1015                1020

cgc cgg ttc acc gtg cac acc cgc acc ggc gac gcc ccg tgg acg ctg   3122
Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu
        1025                1030                1035

cac gcc gag ggg gtg ctg cgc ccc cat ggc acg gcc ctg ccc gat gcg   3170
His Ala Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu Pro Asp Ala
    1040                1045                1050

gcc gac gcc gag tgg ccc cca ccg ggc gcg gtg ccc gcg gac ggg ctg   3218
Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
1055                1060                1065                1070

ccg ggt gtg tgg cgc cgg ggg gac cag gtc ttc gcc gag gcc gag gtg   3266
Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu Ala Glu Val
                1075                1080                1085
```

```
gac gga ccg gac ggt ttc gtg gtg cac ccc gac ctg ctc gac gcg gtc    3314
Asp Gly Pro Asp Gly Phe Val Val His Pro Asp Leu Leu Asp Ala Val
            1090                1095                1100

ttc tcc gcg gtc ggc gac gga agc cgc cag ccg gcc gga tgg cgc gac    3362
Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp
        1105                1110                1115

ctg acg gtg cac gcg tcg gac gcc acc gta ctg cgc gcc tgc ctc acc    3410
Leu Thr Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
    1120                1125                1130

cgg cgc acc gac gga gcc atg gga ttc gcc gcc ttc gac ggc gcc ggc    3458
Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp Gly Ala Gly
1135                1140                1145                1150

ctg ccg gta ctc acc gcg gag gcg gtg acg ctg cgg gag gtg gcg tca    3506
Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu Val Ala Ser
                1155                1160                1165

ccg tcc ggc tcc gag gag tcg gac ggc ctg cac cgg ttg gag tgg ctc    3554
Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu Glu Trp Leu
            1170                1175                1180

gcg gtc gcc gag gcg gtc tac gac ggt gac ctg ccc gag gga cat gtc    3602
Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu Gly His Val
        1185                1190                1195

ctg atc acc gcc gcc cac ccc gac gac ccc gag gac ata ccc acc cgc    3650
Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg
    1200                1205                1210

gcc cac acc cgc gcc acc cgc gtc ctg acc gcc ctg caa cac cac ctc    3698
Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln His His Leu
1215                1220                1225                1230

acc acc acc gac cac acc ctc atc gtc cac acc acc acc gac ccc gcc    3746
Thr Thr Thr Asp His Thr Leu Ile Val His Thr Thr Thr Asp Pro Ala
                1235                1240                1245

ggc gcc acc gtc acc ggc ctc acc cgc acc gcc cag aac gaa cac ccc    3794
Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro
            1250                1255                1260

cac cgc atc cgc ctc atc gaa acc gac cac ccc cac acc ccc ctc ccc    3842
His Arg Ile Arg Leu Ile Glu Thr Asp His Pro His Thr Pro Leu Pro
        1265                1270                1275

ctg gcc caa ctc gcc acc ctc gac cac ccc cac ctc cgc ctc acc cac    3890
Leu Ala Gln Leu Ala Thr Leu Asp His Pro His Leu Arg Leu Thr His
    1280                1285                1290

cac acc ctc cac cac ccc cac ctc acc ccc ctc cac acc acc acc cca    3938
His Thr Leu His His Pro His Leu Thr Pro Leu His Thr Thr Thr Pro
1295                1300                1305                1310
```

ccc acc acc acc ccc ctc aac ccc gaa cac gcc atc atc atc acc ggc 3986
Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile Ile Thr Gly
1315 1320 1325

ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctg aac cac ccc 4034
Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro
1330 1335 1340

cac acc tac ctc ctc tcc cgc acc cca ccc ccc gac gcc acc ccc ggc 4082
His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly
1345 1350 1355

acc cac ctc ccc tgc gac gtc ggc gac ccc cac caa ctc gcc acc acc 4130
Thr His Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu Ala Thr Thr
1360 1365 1370

ctc acc cac atc ccc caa ccc ctc acc gcc atc ttc cac acc gcc gcc 4178
Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile Phe His Thr Ala Ala
1375 1380 1385 1390

acc ctc gac gac ggc atc ctc cac gcc ctc acc ccc gac cgc ctc acc 4226
Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp Arg Leu Thr
1395 1400 1405

acc gtc ctc cac ccc aaa gcc aac gcc gcc tgg cac ctg cac cac ctc 4274
Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp His Leu His His Leu
1410 1415 1420

acc caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc 4322
Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala
1425 1430 1435

gcc gtc ctc ggc agc ccc gga caa gga aac tac gcc gcc gcc aac gcc 4370
Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala
1440 1445 1450

ttc ctc gac gcc ctc gcc acc cac cgc cac acc ctc ggc caa ccc gcc 4418
Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Leu Gly Gln Pro Ala
1455 1460 1465 1470

acc tcc atc gcc tgg ggc atg tgg cac acc acc agc acc ctc acc gga 4466
Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr Leu Thr Gly
1475 1480 1485

caa ctc gac gac gcc gac cgg gac cgc atc cgc cgc ggc ggt ttc ctc 4514
Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu
1490 1495 1500

ccg atc acg gac gac gag ggc atggggatgc at 4547
Pro Ile Thr Asp Asp Glu Gly
1505

<210> 23
<211> 1509
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 23
Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
1 5 10 15

Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
20 25 30

Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
35 40 45

Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
50 55 60

Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
65 70 75 80

Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
85 90 95

His Asp Glu Pro Leu Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly
100 105 110

Gly Val Ala Ser Pro Glu Glu Leu Trp His Leu Val Ala Ser Gly Thr
115 120 125

Asp Ala Ile Thr Glu Phe Pro Thr Asp Arg Gly Trp Asp Val Asp Ala
130 135 140

Ile Tyr Asp Pro Asp Pro Asp Ala Ile Gly Lys Thr Phe Val Arg His
145 150 155 160

Gly Gly Phe Leu Thr Gly Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly
165 170 175

Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Val Leu
180 185 190

Leu Glu Thr Ser Trp Glu Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp
195 200 205

Ser Thr Arg Gly Ser Asp Thr Gly Val Phe Val Gly Ala Phe Ser Tyr
210 215 220

Gly Tyr Gly Thr Gly Ala Asp Thr Asp Gly Phe Gly Ala Thr Gly Ser
225 230 235 240

Gln Thr Ser Val Leu Ser Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu
245 250 255

Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
260 265 270

Leu His Gln Ala Gly Gln Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala
275 280 285

Leu Val Gly Gly Val Thr Val Met Ala Ser Pro Gly Gly Phe Val Glu
290 295 300

Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe
305 310 315 320

Gly Ala Gly Ala Asp Gly Thr Ser Phe Ala Glu Gly Ala Gly Val Leu
325 330 335

Ile Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Thr Val Leu
340 345 350

Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly
355 360 365

Leu Ser Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Gln Ala
370 375 380

Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala
385 390 395 400

His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu Ala Gln Ala Val
405 410 415

Leu Ala Thr Tyr Gly Gln Glu Arg Ala Thr Pro Leu Leu Leu Gly Ser
420 425 430

Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ser Gly Val Ala Gly
435 440 445

Ile Ile Lys Met Val Gln Ala Leu Arg His Gly Glu Leu Pro Pro Thr
450 455 460

Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Thr Ala Gly Ala
465 470 475 480

Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp Arg Pro
485 490 495

Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
500 505 510

Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala Ser Pro
515 520 525

Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu
530 535 540

Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr Pro Asp
545 550 555 560

Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr His Phe
565 570 575

```
Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr Pro Pro
            580                 585                 590

Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr
        595                 600                 605

Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val Val Phe
    610                 615                 620

Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe Val Asp
625                 630                 635                 640

Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp Arg Val
                645                 650                 655

Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu Ala Ala
            660                 665                 670

Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly His Ser
        675                 680                 685

Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser Leu Arg
    690                 695                 700

Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala Arg Gly
705                 710                 715                 720

Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala Gln Asp
                725                 730                 735

Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly Pro Ala
            740                 745                 750

Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val Leu Thr
        755                 760                 765

Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val Asp Tyr
    770                 775                 780

Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu Leu Asp
785                 790                 795                 800

Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp Leu Ser
                805                 810                 815

Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu Tyr Trp
            820                 825                 830

Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val Ser Gln
        835                 840                 845

Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala Ser Pro
    850                 855                 860

Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala Thr Leu
865                 870                 875                 880
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```
Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala Gln
                885                 890                 895

Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly Thr
            900                 905                 910

Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln
        915                 920                 925

Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His
    930                 935                 940

Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val
945                 950                 955                 960

Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala
                965                 970                 975

Glu Leu Ala Leu Ala Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu
            980                 985                 990

Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr
        995                1000                1005

Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg
   1010                1015                1020

Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala
025                1030                1035                1040

Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp
               1045                1050                1055

Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly
           1060                1065                1070

Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly
       1075                1080                1085

Pro Asp Gly Phe Val Val His Pro Asp Leu Leu Asp Ala Val Phe Ser
   1090                1095                1100

Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr
105                1110                1115                1120

Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg
               1125                1130                1135

Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro
           1140                1145                1150

Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser
       1155                1160                1165

Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val
   1170                1175                1180
```

Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile
185 1190 1195 1200

Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His
1205 1210 1215

Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln His His Leu Thr Thr
1220 1225 1230

Thr Asp His Thr Leu Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala
1235 1240 1245

Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro His Arg
1250 1255 1260

Ile Arg Leu Ile Glu Thr Asp His Pro His Thr Pro Leu Pro Leu Ala
265 1270 1275 1280

Gln Leu Ala Thr Leu Asp His Pro His Leu Arg Leu Thr His His Thr
1285 1290 1295

Leu His His Pro His Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr
1300 1305 1310

Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser
1315 1320 1325

Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
1330 1335 1340

Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His
345 1350 1355 1360

Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr
1365 1370 1375

His Ile Pro Gln Pro Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu
1380 1385 1390

Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val
1395 1400 1405

Leu His Pro Lys Ala Asn Ala Ala Trp His Leu His His Leu Thr Gln
1410 1415 1420

Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val
425 1430 1435 1440

Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu
1445 1450 1455

Asp Ala Leu Ala Thr His Arg His Thr Leu Gly Gln Pro Ala Thr Ser
1460 1465 1470

Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu
1475 1480 1485

Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
1490 1495 1500

Thr Asp Asp Glu Gly
505

<210> 24
<211> 4725
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(4724)

<400> 24
gc atg cgg ctg tac gag gcg gca cgg cgc acc gga agt ccc gtg gtg 47
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
1 5 10 15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg 95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
20 25 30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc 143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
35 40 45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc 191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
50 55 60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc 239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
65 70 75

gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac 287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
80 85 90 95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc 335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
100 105 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg 383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
115 120 125

ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc 431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val
130 135 140

```
gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg   479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala
    145                 150                 155

atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag   527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln
160                 165                 170                 175

gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc   575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe
                180                 185                 190

ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc   623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro
            195                 200                 205

gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt   671
Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly
        210                 215                 220

gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc   719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala
    225                 230                 235

ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag   767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu
240                 245                 250                 255

gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac   815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp
                260                 265                 270

acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg   863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala
            275                 280                 285

gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc   911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser
        290                 295                 300

ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc   959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val
    305                 310                 315

gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag   1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln
320                 325                 330                 335

tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg   1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr
                340                 345                 350

gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg   1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly
            355                 360                 365
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ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt 1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly
370 375 380

acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc 1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser
385 390 395

gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc 1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser
400 405 410 415

gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc 1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly
420 425 430

ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc 1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu
435 440 445

acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc 1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg
450 455 460

ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag 1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln
465 470 475

gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg 1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly
480 485 490 495

cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag 1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln
500 505 510

gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg 1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro
515 520 525

tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg 1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser
530 535 540

gcc cgg ccg tgg ccg ggg acc ggt cgc ccg cgc cgc gct gcc gtc tcg 1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser
545 550 555

tcg ttc ggc gtg agc ggc acg aac gcc cac atc atc ctt gag gca gga 1727
Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly
560 565 570 575

ccg gtc aaa acg gga ccg gtc gag gca gga gcg atc gag gca gga ccg 1775
Pro Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro
580 585 590

```
gtc gaa gta gga ccg gtc gag gct gga ccg ctc ccc gcg gcg ccg ccg   1823
Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro
            595                 600                 605

tca gca ccg ggc gaa gac ctt ccg ctg ctc gtg tcg gcg cgt tcc ccg   1871
Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro
        610                 615                 620

gag gca ctc gac gag cag atc ggg cgc ctg cgc gcc tat ctc gac acc   1919
Glu Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr
    625                 630                 635

ggc ccg ggc gtc gac cgg gcg gcc gtg gcg cag aca ctg gcc cgg cgt   1967
Gly Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg
640                 645                 650                 655

acg cac ttc acc cac cgg gcc gta ctg ctc ggg gac acc gtc atc ggc   2015
Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly
                660                 665                 670

gct ccc ccc gcg gac cag gcc gac gaa ctc gtc ttc gtc tac tcc ggt   2063
Ala Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly
            675                 680                 685

cag ggc acc cag cat ccc gcg atg ggc gag caa ctc gcg gcc gcg ttc   2111
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe
        690                 695                 700

ccc gtg ttc gcc gat gcc tgg cac gac gcg ctc cga cgg ctc gac gac   2159
Pro Val Phe Ala Asp Ala Trp His Asp Ala Leu Arg Arg Leu Asp Asp
    705                 710                 715

ccc gac ccg cac gac ccc aca cgg agc cag cac acg ctc ttc gcc cac   2207
Pro Asp Pro His Asp Pro Thr Arg Ser Gln His Thr Leu Phe Ala His
720                 725                 730                 735

cag gcg gcg ttc acc gcc ctc ctg agg tcc tgg gac atc acg ccg cac   2255
Gln Ala Ala Phe Thr Ala Leu Leu Arg Ser Trp Asp Ile Thr Pro His
                740                 745                 750

gcc gtc atc ggc cac tcg ctc ggc gag atc acc gcc gcg tac gcc gcc   2303
Ala Val Ile Gly His Ser Leu Gly Glu Ile Thr Ala Ala Tyr Ala Ala
            755                 760                 765

ggg atc ctg tcg ctc gac gac gcc tgc acc ctg atc acc acg cgt gcc   2351
Gly Ile Leu Ser Leu Asp Asp Ala Cys Thr Leu Ile Thr Thr Arg Ala
        770                 775                 780

cgc ctc atg cac acg ctt ccg ccg ccc ggc gcc atg gtc acc gtg ctg   2399
Arg Leu Met His Thr Leu Pro Pro Pro Gly Ala Met Val Thr Val Leu
    785                 790                 795

acc agc gag gag gag gcc cgt cag gcg ctg cgg ccg ggc gtg gag atc   2447
Thr Ser Glu Glu Glu Ala Arg Gln Ala Leu Arg Pro Gly Val Glu Ile
800                 805                 810                 815
```

```
gcc gcg gtc ttc ggc ccg cac tcc gtc gtg ctc tcg ggc gac gag gac   2495
Ala Ala Val Phe Gly Pro His Ser Val Val Leu Ser Gly Asp Glu Asp
                820                 825                 830

gcc gtg ctc gac gtc gca cag cgg ctc ggc atc cac cac cgt ctg ccc   2543
Ala Val Leu Asp Val Ala Gln Arg Leu Gly Ile His His Arg Leu Pro
            835                 840                 845

gcg ccg cac gcg ggc cac tcc gcg cac atg gaa ccc gtg gcc gcc gag   2591
Ala Pro His Ala Gly His Ser Ala His Met Glu Pro Val Ala Ala Glu
        850                 855                 860

ctg ctc gcc acc act cgc gag ctc cgt tac gac cgg ccc cac acc gcc   2639
Leu Leu Ala Thr Thr Arg Glu Leu Arg Tyr Asp Arg Pro His Thr Ala
    865                 870                 875

atc ccg aac gac ccc acc acc gcc gag tac tgg gcc gag cag gtc cgc   2687
Ile Pro Asn Asp Pro Thr Thr Ala Glu Tyr Trp Ala Glu Gln Val Arg
880                 885                 890                 895

aac ccc gtg ctg ttc cac gcc cac acc cag cgg tac ccc gac gcc gtg   2735
Asn Pro Val Leu Phe His Ala His Thr Gln Arg Tyr Pro Asp Ala Val
                900                 905                 910

ttc gtc gag atc ggc ccc ggc cag gac ctc tca ccg ctg gtc gac ggc   2783
Phe Val Glu Ile Gly Pro Gly Gln Asp Leu Ser Pro Leu Val Asp Gly
            915                 920                 925

atc gcc ctg cag aac ggc acg gcg gac gag gtg cac gcg ctg cac acc   2831
Ile Ala Leu Gln Asn Gly Thr Ala Asp Glu Val His Ala Leu His Thr
        930                 935                 940

gcg ctc gcc cgc ctc ttc aca cgc ggc gcc acg ctc gac tgg tcc cgc   2879
Ala Leu Ala Arg Leu Phe Thr Arg Gly Ala Thr Leu Asp Trp Ser Arg
    945                 950                 955

atc ctc ggc ggt gct tcg cgg cac gac cct gac gtc ccc tcg tac gcg   2927
Ile Leu Gly Gly Ala Ser Arg His Asp Pro Asp Val Pro Ser Tyr Ala
960                 965                 970                 975

ttc cag cgg cgt ccc tac tgg atc gag tcg gct ccc ccg gcc acg gcc   2975
Phe Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro Pro Ala Thr Ala
                980                 985                 990

gac tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg   3023
Asp Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser
            995                1000                1005

ccg ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg   3071
Pro Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala
        1010                1015                1020

gtg ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc   3119
Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys
    1025                1030                1035
```

```
gcc acg gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc   3167
Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala
1040                1045                1050                1055

cgc ggc agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac   3215
Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp
                1060                1065                1070

ggg cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg   3263
Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp
            1075                1080                1085

acg ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc   3311
Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro
        1090                1095                1100

gaa gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac   3359
Glu Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp
    1105                1110                1115

ggg ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc   3407
Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala
1120                1125                1130                1135

gaa gtc gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac   3455
Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp
                1140                1145                1150

gcg gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg   3503
Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp
            1155                1160                1165

cgc gac ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc   3551
Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys
        1170                1175                1180

ctc acc cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt   3599
Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly
    1185                1190                1195

gcc gga atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc   3647
Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val
1200                1205                1210                1215

gcg tcg gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag   3695
Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu
                1220                1225                1230

tgg ttg ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc   3743
Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro
            1235                1240                1245

gag ggc tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac   3791
Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp
        1250                1255                1260
```

```
ccc acc aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca   3839
Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr
   1265                1270                1275

cgc gtc ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc   3887
Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr
1280                1285                1290                1295

ctc atc gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc   3935
Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly
               1300                1305                1310

ctc acc cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc   3983
Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile
           1315                1320                1325

gaa acc cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc   4031
Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr
       1330                1335                1340

ctc cac caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc   4079
Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro
   1345                1350                1355

cac ctc acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc   4127
His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro
1360                1365                1370                1375

aac acc cca ccc ctc aac ccc aac cac gcc atc ctc atc acc ggc ggc   4175
Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly
               1380                1385                1390

tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac   4223
Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His
           1395                1400                1405

acc tac ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc ggc acc   4271
Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr
       1410                1415                1420

cac atc ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc   4319
His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu
   1425                1430                1435

acc cac ata cca caa ccc ctc acc ggc atc ttc cac acc gcc gcc acc   4367
Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr
1440                1445                1450                1455

ctc gac gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc   4415
Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr
               1460                1465                1470

acc ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc   4463
Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr
           1475                1480                1485
```

```
caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc   4511
Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala
       1490                1495                1500

acc ctc ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc   4559
Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe
   1505                1510                1515

ctc gac gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc   4607
Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr
1520                1525                1530                1535

acc atc gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa   4655
Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln
               1540                1545                1550

ctc acc gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg   4703
Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro
           1555                1560                1565

atc tcg gac gac gag ggc atg c                                    4725
Ile Ser Asp Asp Glu Gly Met
       1570
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<210> 25
<211> 1574
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 25

```
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
  1               5                  10                  15

Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
             20                  25                  30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
         35                  40                  45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
     50                  55                  60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
 65                  70                  75                  80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
                 85                  90                  95

Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
            100                 105                 110
```

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
115 120 125

Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
130 135 140

Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
145 150 155 160

Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
165 170 175

Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
180 185 190

Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
195 200 205

Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
210 215 220

Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
225 230 235 240

Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
245 250 255

Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
260 265 270

Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
275 280 285

Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
290 295 300

Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
305 310 315 320

Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
325 330 335

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
340 345 350

Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
355 360 365

Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
370 375 380

Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
385 390 395 400

Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
405 410 415

Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
420 425 430

Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
435 440 445

Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
450 455 460

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
465 470 475 480

Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
485 490 495

Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
500 505 510

Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
515 520 525

Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
530 535 540

Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
545 550 555 560

Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
565 570 575

Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
580 585 590

Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
595 600 605

Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
610 615 620

Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
625 630 635 640

Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
645 650 655

His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
660 665 670

Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
675 680 685

Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro
690 695 700

Val Phe Ala Asp Ala Trp His Asp Ala Leu Arg Arg Leu Asp Asp Pro
705 710 715 720

```
Asp Pro His Asp Pro Thr Arg Ser Gln His Thr Leu Phe Ala His Gln
                725                 730                 735

Ala Ala Phe Thr Ala Leu Leu Arg Ser Trp Asp Ile Thr Pro His Ala
            740                 745                 750

Val Ile Gly His Ser Leu Gly Glu Ile Thr Ala Ala Tyr Ala Ala Gly
        755                 760                 765

Ile Leu Ser Leu Asp Asp Ala Cys Thr Leu Ile Thr Thr Arg Ala Arg
    770                 775                 780

Leu Met His Thr Leu Pro Pro Pro Gly Ala Met Val Thr Val Leu Thr
785                 790                 795                 800

Ser Glu Glu Glu Ala Arg Gln Ala Leu Arg Pro Gly Val Glu Ile Ala
                805                 810                 815

Ala Val Phe Gly Pro His Ser Val Val Leu Ser Gly Asp Glu Asp Ala
            820                 825                 830

Val Leu Asp Val Ala Gln Arg Leu Gly Ile His His Arg Leu Pro Ala
        835                 840                 845

Pro His Ala Gly His Ser Ala His Met Glu Pro Val Ala Ala Glu Leu
    850                 855                 860

Leu Ala Thr Thr Arg Glu Leu Arg Tyr Asp Arg Pro His Thr Ala Ile
865                 870                 875                 880

Pro Asn Asp Pro Thr Thr Ala Glu Tyr Trp Ala Glu Gln Val Arg Asn
                885                 890                 895

Pro Val Leu Phe His Ala His Thr Gln Arg Tyr Pro Asp Ala Val Phe
            900                 905                 910

Val Glu Ile Gly Pro Gly Gln Asp Leu Ser Pro Leu Val Asp Gly Ile
        915                 920                 925

Ala Leu Gln Asn Gly Thr Ala Asp Glu Val His Ala Leu His Thr Ala
    930                 935                 940

Leu Ala Arg Leu Phe Thr Arg Gly Ala Thr Leu Asp Trp Ser Arg Ile
945                 950                 955                 960

Leu Gly Gly Ala Ser Arg His Asp Pro Asp Val Pro Ser Tyr Ala Phe
                965                 970                 975

Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro Pro Ala Thr Ala Asp
            980                 985                 990

Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro
        995                1000                1005

Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val
   1010                1015                1020
```

Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala
025 1030 1035 104

Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg
1045 1050 1055

Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly
1060 1065 1070

Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr
1075 1080 1085

Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu
1090 1095 1100

Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly
105 1110 1115 112

Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
1125 1130 1135

Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
1140 1145 1150

Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
1155 1160 1165

Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
1170 1175 1180

Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
185 1190 1195 120

Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
1205 1210 1215

Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
1220 1225 1230

Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
1235 1240 1245

Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro
1250 1255 1260

Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
265 1270 1275 128

Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
1285 1290 1295

Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
1300 1305 1310

Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
1315 1320 1325

Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
1330 1335 1340
His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
345 1350 1355 136

Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Pro Asn
1365 1370 1375

Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
1380 1385 1390

Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
1395 1400 1405

Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
1410 1415 1420

Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
425 1430 1435 144

His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
1445 1450 1455

Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
1460 1465 1470

Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
1475 1480 1485

Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
1490 1495 1500

Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
505 1510 1515 152

Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
1525 1530 1535

Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
1540 1545 1550

Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
1555 1560 1565

Ser Asp Asp Glu Gly Met
1570

<210> 26
<211> 4674
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(4673)

<400> 26

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gc atg cgg ctg tac gag gcg gca cgg cgc acc gga agt ccc gtg gtg    47
   Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
     1               5                  10                  15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg    95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
                 20                  25                  30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc   143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
             35                  40                  45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc   191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
         50                  55                  60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc   239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
     65                  70                  75

gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac   287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
 80                  85                  90                  95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc   335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
                100                 105                 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg   383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
            115                 120                 125

ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc   431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val
        130                 135                 140

gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg   479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala
    145                 150                 155

atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag   527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln
160                 165                 170                 175

gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc   575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe
                180                 185                 190

ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc   623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro
            195                 200                 205

gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt   671
```

Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly
210 215 220

gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc 719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala
225 230 235

ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag 767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu
240 245 250 255

gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac 815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp
260 265 270

acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg 863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala
275 280 285

gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc 911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser
290 295 300

ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc 959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val
305 310 315

gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag 1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln
320 325 330 335

tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg 1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr
340 345 350

gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg 1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly
355 360 365

ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt 1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly
370 375 380

acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc 1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser
385 390 395

gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc 1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser
400 405 410 415

gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc 1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly
420 425 430

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ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc   1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu
            435                 440                 445

acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc   1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg
        450                 455                 460

ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag   1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln
    465                 470                 475

gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg   1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly
480                 485                 490                 495

cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag   1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln
                500                 505                 510

gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg   1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro
            515                 520                 525

tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg   1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser
        530                 535                 540

gcc cgg ccg tgg ccg ggg acc ggt cgc cct agg cgg gca ggc gtg tcg   1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser
    545                 550                 555

tcc ttc ggg atc agt ggc acc aac gcc cac gtc atc ctg gaa agc gca   1727
Ser Phe Gly Ile Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala
560                 565                 570                 575

ccc ccc act cag cct gcg gac aac gcg gtg atc gag cgg gca ccg gag   1775
Pro Pro Thr Gln Pro Ala Asp Asn Ala Val Ile Glu Arg Ala Pro Glu
                580                 585                 590

tgg gtg ccg ttg gtg att tcg gcc agg acc cag tcg gct ttg act gag   1823
Trp Val Pro Leu Val Ile Ser Ala Arg Thr Gln Ser Ala Leu Thr Glu
            595                 600                 605

cac gag ggc cgg ttg cgt gcg tat ctg gcg gcg tcg ccc ggg gtg gat   1871
His Glu Gly Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro Gly Val Asp
        610                 615                 620

atg cgg gct gtg gca tcg acg ctg gcg atg aca cgg tcg gtg ttc gag   1919
Met Arg Ala Val Ala Ser Thr Leu Ala Met Thr Arg Ser Val Phe Glu
    625                 630                 635

cac cgt gcc gtg ctg ctg gga gat gac acc gtc acc ggc acc gct gtg   1967
His Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly Thr Ala Val
640                 645                 650                 655
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tct gac cct cgg gcg gtg ttc gtc ttc ccg gga cag ggg tcg cag cgt     2015
Ser Asp Pro Arg Ala Val Phe Val Phe Pro Gly Gln Gly Ser Gln Arg
                660                 665                 670

gct ggc atg ggt gag gaa ctg gcc gcc gcg ttc ccc gtc ttc gcg cgg     2063
Ala Gly Met Gly Glu Glu Leu Ala Ala Ala Phe Pro Val Phe Ala Arg
            675                 680                 685

atc cat cag cag gtg tgg gac ctg ctc gat gtg ccc gat ctg gag gtg     2111
Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu Glu Val
        690                 695                 700

aac gag acc ggt tac gcc cag ccg gcc ctg ttc gca atg cag gtg gct     2159
Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln Val Ala
    705                 710                 715

ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga ccg gac gcg gtg atc     2207
Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala Val Ile
720                 725                 730                 735

ggc cat tcg gtg ggt gag ctt gcg gct gcg tat gtg tcc ggg gtg tgg     2255
Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly Val Trp
                740                 745                 750

tcg ttg gag gat gcc tgc act ttg gtg tcg gcg cgg gct cgt ctg atg     2303
Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg Leu Met
            755                 760                 765

cag gct ctg ccc gcg ggt ggg gtg atg gtc gct gtc ccg gtc tcg gag     2351
Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val Ser Glu
        770                 775                 780

gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg gag atc gcc gcg gtc     2399
Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala Ala Val
    785                 790                 795

aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat gag gcc gcc gtg ctg     2447
Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala Val Leu
800                 805                 810                 815

cag gcc gcg gag ggg ctg ggg aag tgg acg cgg ctg gcg acc agc cac     2495
Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr Ser His
                820                 825                 830

gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg gag gag ttc cgg gcg     2543
Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe Arg Ala
            835                 840                 845

gtc gcc gaa ggc ctg acc tac cgg acg ccg cag gtc tcc atg gcc gtt     2591
Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met Ala Val
        850                 855                 860

ggt gat cag gtg acc acc gct gag tac tgg gtg cgg cag gtc cgg gac     2639
Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val Arg Asp
    865                 870                 875
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acg gtc cgg ttc ggc gag cag gtg gcc tcg tac gag gac gcc gtg ttc     2687
Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala Val Phe
880                 885                 890                 895

gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc ctg gtc gac ggt gtc     2735
Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp Gly Val
                900                 905                 910

gcg atg ctg cac ggc gac cac gaa atc cag gcc gcg atc ggc gcc ctg     2783
Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly Ala Leu
            915                 920                 925

gcc cac ctg tat gtc aac ggc gtc acg gtc gac tgg ccc gcg ctc ctg     2831
Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala Leu Leu
        930                 935                 940

ggc gat gct ccg gca aca cgg gtg ctg gac ctt ccg aca tac gcc ttc     2879
Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe
    945                 950                 955

cag cac cag cgc tac tgg ctc gag tcg gct ccc ccg gcc acg gcc gac     2927
Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp
960                 965                 970                 975

tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg ccg     2975
Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro
                980                 985                 990

ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg gtg     3023
Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val
            995                 1000                1005

ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc gcc     3071
Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala
        1010                1015                1020

acg gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc cgc     3119
Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg
    1025                1030                1035

ggc agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac ggg     3167
Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly
1040                1045                1050                1055

cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg acg     3215
Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr
                1060                1065                1070

ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc gaa     3263
Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu
            1075                1080                1085

gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac ggg     3311
Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly
        1090                1095                1100
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ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc gaa 3359
Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
1105 1110 1115

gtc gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac gcg 3407
Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
1120 1125 1130 1135

gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg cgc 3455
Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
1140 1145 1150

gac ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc ctc 3503
Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
1155 1160 1165

acc cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt gcc 3551
Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
1170 1175 1180

gga atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc gcg 3599
Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
1185 1190 1195

tcg gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag tgg 3647
Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
1200 1205 1210 1215

ttg ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc gag 3695
Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
1220 1225 1230

ggc tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac ccc 3743
Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro
1235 1240 1245

acc aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca cgc 3791
Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
1250 1255 1260

gtc ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc ctc 3839
Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
1265 1270 1275

atc gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc ctc 3887
Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
1280 1285 1290 1295

acc cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc gaa 3935
Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
1300 1305 1310

acc cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc ctc 3983
Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
1315 1320 1325

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cac caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc cac    4031
His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
        1330                1335                1340

ctc acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc aac    4079
Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn
    1345                1350                1355

acc cca ccc ctc aac ccc aac cac gcc atc ctc atc acc ggc ggc tcc    4127
Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
1360                1365                1370                1375

ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac acc    4175
Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
                1380                1385                1390

tac ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc ggc acc cac    4223
Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
            1395                1400                1405

atc ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc acc    4271
Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
        1410                1415                1420

cac ata cca caa ccc ctc acc ggc atc ttc cac acc gcc gcc acc ctc    4319
His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
    1425                1430                1435

gac gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc acc    4367
Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
1440                1445                1450                1455

ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc caa    4415
Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
                1460                1465                1470

aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc acc    4463
Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
            1475                1480                1485

ctc ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc ctc    4511
Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
        1490                1495                1500

gac gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc acc    4559
Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
    1505                1510                1515

atc gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa ctc    4607
Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
1520                1525                1530                1535

acc gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg atc    4655
Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
                1540                1545                1550
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tcg gac gac gag ggc atg c 4674
Ser Asp Asp Glu Gly Met
1555

<210> 27
<211> 1557
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 27
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
1 5 10 15

Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
20 25 30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
35 40 45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
50 55 60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65 70 75 80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
85 90 95

Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
100 105 110

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
115 120 125

Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
130 135 140

Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
145 150 155 160

Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
165 170 175

Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
180 185 190

Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
195 200 205

Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
210 215 220

Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
225 230 235 240

Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
245 250 255

Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
260 265 270

Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
275 280 285

Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
290 295 300

Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
305 310 315 320

Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
325 330 335

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
340 345 350

Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
355 360 365

Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
370 375 380

Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
385 390 395 400

Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
405 410 415

Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
420 425 430

Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
435 440 445

Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
450 455 460

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
465 470 475 480

Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
485 490 495

Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
500 505 510

Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
515 520 525

Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
530 535 540

Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser Ser
545 550 555 560

Phe Gly Ile Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala Pro
565 570 575

Pro Thr Gln Pro Ala Asp Asn Ala Val Ile Glu Arg Ala Pro Glu Trp
580 585 590

Val Pro Leu Val Ile Ser Ala Arg Thr Gln Ser Ala Leu Thr Glu His
595 600 605

Glu Gly Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro Gly Val Asp Met
610 615 620

Arg Ala Val Ala Ser Thr Leu Ala Met Thr Arg Ser Val Phe Glu His
625 630 635 640

Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly Thr Ala Val Ser
645 650 655

Asp Pro Arg Ala Val Phe Val Phe Pro Gly Gln Gly Ser Gln Arg Ala
660 665 670

Gly Met Gly Glu Glu Leu Ala Ala Ala Phe Pro Val Phe Ala Arg Ile
675 680 685

His Gln Gln Val Trp Asp Leu Leu Asp Val Pro Asp Leu Glu Val Asn
690 695 700

Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala Met Gln Val Ala Leu
705 710 715 720

Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro Asp Ala Val Ile Gly
725 730 735

His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val Ser Gly Val Trp Ser
740 745 750

Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg Ala Arg Leu Met Gln
755 760 765

Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Pro Val Ser Glu Asp
770 775 780

Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala Ala Val Asn
785 790 795 800

Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala Val Leu Gln
805 810 815

Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr Ser His Ala
820 825 830

Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe Arg Ala Val
835 840 845

Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met Ala Val Gly
850 855 860

Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val Arg Asp Thr
865 870 875 880

Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala Val Phe Val
885 890 895

Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp Gly Val Ala
900 905 910

Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly Ala Leu Ala
915 920 925

His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala Leu Leu Gly
930 935 940

Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
945 950 955 960

His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
965 970 975

Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
980 985 990

Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
995 1000 1005

Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr
1010 1015 1020

Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
025 1030 1035 104

Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
1045 1050 1055

Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
1060 1065 1070

His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
1075 1080 1085

Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
1090 1095 1100

Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
105 1110 1115 112

Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
1125 1130 1135

Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
1140 1145 1150

Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
1155 1160 1165

Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
1170 1175 1180

Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
185 1190 1195 120

Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
1205 1210 1215

Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
1220 1225 1230

Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
1235 1240 1245

Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
1250 1255 1260

Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
265 1270 1275 128

Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
1285 1290 1295

Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
1300 1305 1310

His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
1315 1320 1325

Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
1330 1335 1340

Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
345 1350 1355 136

Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
1365 1370 1375

Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
1380 1385 1390

Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
1395 1400 1405

Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
1410 1415 1420

Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
425 1430 1435 144

```
Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
                1445                1450                1455

Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
            1460                1465                1470

Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
        1475                1480                1485

Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
    1490                1495                1500

Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
505                 1510                1515                152

Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
                1525                1530                1535

Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
            1540                1545                1550

Asp Asp Glu Gly Met
        1555
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<210> 28
<211> 4767
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(4766)

<400> 28

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gc atg cgg ctg tac gag gcg gca cgg cgc acc gga agt ccc gtg gtg    47
   Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
     1               5                  10                  15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg   95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
                 20                  25                  30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc   143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
             35                  40                  45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc   191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
         50                  55                  60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc   239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
     65                  70                  75
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gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac 287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
80 85 90 95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc 335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
100 105 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg 383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
115 120 125

ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc 431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val
130 135 140

gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg 479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala
145 150 155

atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag 527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln
160 165 170 175

gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc 575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe
180 185 190

ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc 623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro
195 200 205

gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt 671
Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly
210 215 220

gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc 719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala
225 230 235

ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag 767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu
240 245 250 255

gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac 815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp
260 265 270

acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg 863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala
275 280 285

gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc 911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser
290 295 300

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ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc   959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val
    305                 310                 315

gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag  1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln
320                 325                 330                 335

tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg  1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr
                340                 345                 350

gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg  1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly
            355                 360                 365

ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt  1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly
        370                 375                 380

acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc  1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser
    385                 390                 395

gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc  1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser
400                 405                 410                 415

gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc  1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly
                420                 425                 430

ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc  1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu
            435                 440                 445

acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc  1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg
        450                 455                 460

ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag  1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln
    465                 470                 475

gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg  1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly
480                 485                 490                 495

cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag  1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln
                500                 505                 510

gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg  1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro
            515                 520                 525
```

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tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg   1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser
        530                 535                 540

gcc cgg ccg tgg ccg ggg acc ggt cgc cct agg cgg gcg ggc gtg tcg   1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser
    545                 550                 555

tcc ttc gga gtc agc ggc acc aac gcc cac gtc atc ctg gag agc gca   1727
Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala
560                 565                 570                 575

ccc ccc gct cag ccc gcg gag gag gcg cag cct gtt gag acg ccg gtg   1775
Pro Pro Ala Gln Pro Ala Glu Glu Ala Gln Pro Val Glu Thr Pro Val
                580                 585                 590

gtg gcc tcg gat gtg ctg ccg ctg gtg ata tcg gcc aag acc cag ccc   1823
Val Ala Ser Asp Val Leu Pro Leu Val Ile Ser Ala Lys Thr Gln Pro
            595                 600                 605

gcc ctg acc gaa cac gaa gac cgg ctg cgc gcc tac ctg gcg gcg tcg   1871
Ala Leu Thr Glu His Glu Asp Arg Leu Arg Ala Tyr Leu Ala Ala Ser
        610                 615                 620

ccc ggg gcg gat ata cgg gct gtg gca tcg acg ctg gcg gtg aca cgg   1919
Pro Gly Ala Asp Ile Arg Ala Val Ala Ser Thr Leu Ala Val Thr Arg
    625                 630                 635

tcg gtg ttc gag cac cgc gcc gta ctc ctt gga gat gac acc gtc acc   1967
Ser Val Phe Glu His Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr
640                 645                 650                 655

ggc acc gcg gtg acc gac ccc agg atc gtg ttt gtc ttt ccc ggg cag   2015
Gly Thr Ala Val Thr Asp Pro Arg Ile Val Phe Val Phe Pro Gly Gln
                660                 665                 670

ggg tgg cag tgg ctg ggg atg ggc agt gca ctg cgc gat tcg tcg gtg   2063
Gly Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg Asp Ser Ser Val
            675                 680                 685

gtg ttc gcc gag cgg atg gcc gag tgt gcg gcg gcg ttg cgc gag ttc   2111
Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe
        690                 695                 700

gtg gac tgg gat ctg ttc acg gtt ctg gat gat ccg gcg gtg gtg gac   2159
Val Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp
    705                 710                 715

cgg gtt gat gtg gtc cag ccc gct tcc tgg gcg atg atg gtt tcc ctg   2207
Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu
720                 725                 730                 735

gcc gcg gtg tgg cag gcg gcc ggt gtg cgg ccg gat gcg gtg atc ggc   2255
Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly
                740                 745                 750
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cat tcg cag ggt gag atc gcc gca gct tgt gtg gcg ggt gcg gtg tca   2303
His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser
            755                 760                 765

cta cgc gat gcc gcc cgg atc gtg acc ttg cgc agc cag gcg atc gcc   2351
Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala
        770                 775                 780

cgg ggc ctg gcg ggc cgg ggc gcg atg gca tcc gtc gcc ctg ccc gcg   2399
Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala
    785                 790                 795

cag gat gtc gag ctg gtc gac ggg gcc tgg atc gcc gcc cac aac ggg   2447
Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly
800                 805                 810                 815

ccc gcc tcc acc gtg atc gcg ggc acc ccg gaa gcg gtc gac cat gtc   2495
Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val
                820                 825                 830

ctc acc gct cat gag gca caa ggg gtg cgg gtg cgg cgg atc acc gtc   2543
Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val
            835                 840                 845

gac tat gcc tcg cac acc ccg cac gtc gag ctg atc cgc gac gaa cta   2591
Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu
        850                 855                 860

ctc gac atc act agc gac agc agc tcg cag acc ccg ctc gtg ccg tgg   2639
Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp
    865                 870                 875

ctg tcg acc gtg gac ggc acc tgg gtc gac agc ccg ctg gac ggg gag   2687
Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu
880                 885                 890                 895

tac tgg tac cgg aac ctg cgt gaa ccg gtc ggt ttc cac ccc gcc gtc   2735
Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val
                900                 905                 910

agc cag ttg cag gcc cag ggc gac acc gtg ttc gtc gag gtc agc gcc   2783
Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala
            915                 920                 925

agc ccg gtg ttg ttg cag gcg atg gac gac gat gtc gtc acg gtt gcc   2831
Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala
        930                 935                 940

acg ctg cgt cgt gac gac ggc gac gcc acc cgg atg ctc acc gcc ctg   2879
Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu
    945                 950                 955

gca cag gcc tat gtc cac ggc gtc acc gtc gac tgg ccc gcc atc ctc   2927
Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu
960                 965                 970                 975
```

ggc acc acc aca acc cgg gta ctg gac ctt ccg acc tac gcc ttc caa 2975
Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
980 985 990

cac cag cgg tac tgg ctc gag tcg gct ccc ccg gcc acg gcc gac tcg 3023
His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
995 1000 1005

ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg ccg ggc 3071
Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
1010 1015 1020

cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg gtg ttc 3119
Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
1025 1030 1035

atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc gcc acg 3167
Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr
1040 1045 1050 1055

gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc cgc ggc 3215
Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
1060 1065 1070

agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac ggg cgg 3263
Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
1075 1080 1085

cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg acg ctg 3311
Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
1090 1095 1100

cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc gaa gcc 3359
His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
1105 1110 1115

gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac ggg ctg 3407
Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
1120 1125 1130 1135

ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc gaa gtc 3455
Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
1140 1145 1150

gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac gcg gtc 3503
Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
1155 1160 1165

ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg cgc gac 3551
Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
1170 1175 1180

ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc ctc acc 3599
Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
1185 1190 1195

```
cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt gcc gga   3647
Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
1200                1205                1210                1215

atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc gcg tcg   3695
Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
                1220                1225                1230

gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag tgg ttg   3743
Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
            1235                1240                1245

ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc gag ggc   3791
Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
        1250                1255                1260

tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac ccc acc   3839
Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
    1265                1270                1275

aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca cgc gtc   3887
Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
1280                1285                1290                1295

ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc ctc atc   3935
Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
                1300                1305                1310

gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc ctc acc   3983
Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
            1315                1320                1325

cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc gaa acc   4031
Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
        1330                1335                1340

cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc ctc cac   4079
His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
    1345                1350                1355

caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc cac ctc   4127
Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
1360                1365                1370                1375

acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc aac acc   4175
Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
                1380                1385                1390

cca ccc ctc aac ccc aac cac gcc atc ctc atc acc ggc ggc tcc ggc   4223
Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
            1395                1400                1405

acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac acc tac   4271
Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
        1410                1415                1420
```

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ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc ggc acc cac atc      4319
Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
   1425                1430                1435

ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc acc cac      4367
Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
1440                1445                1450                1455

ata cca caa ccc ctc acc ggc atc ttc cac acc gcc gcc acc ctc gac      4415
Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
                1460                1465                1470

gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc acc ctc      4463
Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
            1475                1480                1485

caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc caa aac      4511
Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
        1490                1495                1500

caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc acc ctc      4559
Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
    1505                1510                1515

ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc ctc gac      4607
Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
1520                1525                1530                1535

gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc acc atc      4655
Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
                1540                1545                1550

gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa ctc acc      4703
Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
            1555                1560                1565

gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg atc tcg      4751
Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
        1570                1575                1580

gac gac gag ggc atg c                                                4767
Asp Asp Glu Gly Met
    1585
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<210> 29
<211> 1588
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 29

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Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
  1               5                  10                  15
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Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
                20                  25                  30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
            35                  40                  45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
        50                  55                  60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65                  70                  75                  80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
                85                  90                  95

Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
            100                 105                 110

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
        115                 120                 125

Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
    130                 135                 140

Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
145                 150                 155                 160

Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
                165                 170                 175

Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
            180                 185                 190

Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
        195                 200                 205

Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
    210                 215                 220

Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
225                 230                 235                 240

Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
                245                 250                 255

Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
            260                 265                 270

Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
        275                 280                 285

Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
    290                 295                 300

Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
305                 310                 315                 320
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```
Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
                325                 330                 335

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
            340                 345                 350

Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
        355                 360                 365

Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
    370                 375                 380

Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
385                 390                 395                 400

Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
                405                 410                 415

Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
            420                 425                 430

Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
        435                 440                 445

Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
    450                 455                 460

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
465                 470                 475                 480

Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
                485                 490                 495

Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
            500                 505                 510

Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
        515                 520                 525

Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
    530                 535                 540

Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Gly Val Ser Ser
545                 550                 555                 560

Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Ser Ala Pro
                565                 570                 575

Pro Ala Gln Pro Ala Glu Glu Ala Gln Pro Val Glu Thr Pro Val Val
            580                 585                 590

Ala Ser Asp Val Leu Pro Leu Val Ile Ser Ala Lys Thr Gln Pro Ala
        595                 600                 605

Leu Thr Glu His Glu Asp Arg Leu Arg Ala Tyr Leu Ala Ala Ser Pro
    610                 615                 620
```

Gly Ala Asp Ile Arg Ala Val Ala Ser Thr Leu Ala Val Thr Arg Ser
625 630 635 640

Val Phe Glu His Arg Ala Val Leu Leu Gly Asp Asp Thr Val Thr Gly
645 650 655

Thr Ala Val Thr Asp Pro Arg Ile Val Phe Val Phe Pro Gly Gln Gly
660 665 670

Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg Asp Ser Ser Val Val
675 680 685

Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe Val
690 695 700

Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp Arg
705 710 715 720

Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu Ala
725 730 735

Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly His
740 745 750

Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser Leu
755 760 765

Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala Arg
770 775 780

Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala Gln
785 790 795 800

Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly Pro
805 810 815

Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val Leu
820 825 830

Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val Asp
835 840 845

Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu Leu
850 855 860

Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp Leu
865 870 875 880

Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu Tyr
885 890 895

Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val Ser
900 905 910

Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala Ser
915 920 925

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Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala Thr
    930                 935                 940

Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala
945                 950                 955                 960

Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly
                965                 970                 975

Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His
            980                 985                 990

Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser Gly
        995                1000                1005

His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly Arg
   1010                1015                1020

Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe Ile
025                1030                1035                104

Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr Val
               1045                1050                1055

Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly Arg
           1060                1065                1070

Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg Arg
       1075                1080                1085

Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu His
   1090                1095                1100

Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala Val
105                1110                1115                112

Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro
               1125                1130                1135

Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val Asp
           1140                1145                1150

Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val Phe
       1155                1160                1165

Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp Leu
   1170                1175                1180

Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg
185                1190                1195                120

Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly Met
               1205                1210                1215

Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser Ala
           1220                1225                1230
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Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu Pro
1235 1240 1245

Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly Tyr
1250 1255 1260

Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr Asn
265 1270 1275 128

Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val Leu
1285 1290 1295

Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile Val
1300 1305 1310

His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr Arg
1315 1320 1325

Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr His
1330 1335 1340

His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His Gln
345 1350 1355 136

Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu Thr
1365 1370 1375

Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr Pro
1380 1385 1390

Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly Thr
1395 1400 1405

Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu
1410 1415 1420

Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile Pro
425 1430 1435 144

Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His Ile
1445 1450 1455

Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp Asp
1460 1465 1470

Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu Gln
1475 1480 1485

Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn Gln
1490 1495 1500

Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu Gly
505 1510 1515 152

Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala
1525 1530 1535

```
Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile Ala
          1540                1545                1550

Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr Asp
       1555                1560                1565

Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser Asp
   1570                1575                1580

Asp Glu Gly Met
585
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<210> 30
<211> 4737
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(4736)

<400> 30

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   Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
     1               5                  10                  15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg    95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
                20                  25                  30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc   143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
            35                  40                  45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc   191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
        50                  55                  60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc   239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
    65                  70                  75

gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac   287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
80                  85                  90                  95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc   335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
                100                 105                 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg   383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
            115                 120                 125
```

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ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc   431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val
        130                 135                 140

gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg   479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala
    145                 150                 155

atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag   527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln
160                 165                 170                 175

gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc   575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe
                180                 185                 190

ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc   623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro
            195                 200                 205

gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt   671
Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly
        210                 215                 220

gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc   719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala
    225                 230                 235

ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag   767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu
240                 245                 250                 255

gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac   815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp
                260                 265                 270

acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg   863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala
            275                 280                 285

gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc   911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser
        290                 295                 300

ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc   959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val
    305                 310                 315

gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag   1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln
320                 325                 330                 335

tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg   1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr
                340                 345                 350
```

gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg 1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly
355 360 365

ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt 1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly
370 375 380

acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc 1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser
385 390 395

gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc 1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser
400 405 410 415

gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc 1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly
420 425 430

ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc 1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu
435 440 445

acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc 1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg
450 455 460

ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag 1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln
465 470 475

gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg 1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly
480 485 490 495

cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag 1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln
500 505 510

gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg 1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro
515 520 525

tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg 1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser
530 535 540

gcc cgg ccg tgg ccg ggg acc ggt cgc ccg cgc cgc gct gcc gtc tcg 1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser
545 550 555

tcg ttc ggc gtg agc ggc acg aac gcc cac atc atc ctt gag gca gga 1727
Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly
560 565 570 575

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ccg gtc aaa acg gga ccg gtc gag gca gga gcg atc gag gca gga ccg   1775
Pro Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro
                580                 585                 590

gtc gaa gta gga ccg gtc gag gct gga ccg ctc ccc gcg gcg ccg ccg   1823
Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro
            595                 600                 605

tca gca ccg ggc gaa gac ctt ccg ctg ctc gtg tcg gcg cgt tcc ccg   1871
Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro
        610                 615                 620

gag gca ctc gac gag cag atc ggg cgc ctg cgc gcc tat ctc gac acc   1919
Glu Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr
    625                 630                 635

ggc ccg ggc gtc gac cgg gcg gcc gtg gcg cag aca ctg gcc cgg cgt   1967
Gly Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg
640                 645                 650                 655

acg cac ttc acc cac cgg gcc gta ctg ctc ggg gac acc gtc atc ggc   2015
Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly
                660                 665                 670

gct ccc ccc gcg gac cag gcc gac gaa ctc gtc ttc gtc tac tcc ggt   2063
Ala Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly
            675                 680                 685

cag ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gcc gcg ttc   2111
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe
        690                 695                 700

ccc gtc ttc gcg cgg atc cat cag cag gtg tgg gac ctg ctc gat gtg   2159
Pro Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val
    705                 710                 715

ccc gat ctg gag gtg aac gag acc ggt tac gcc cag ccg gcc ctg ttc   2207
Pro Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe
720                 725                 730                 735

gca atg cag gtg gct ctg ttc ggg ctg ctg gaa tcg tgg ggt gta cga   2255
Ala Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg
                740                 745                 750

ccg gac gcg gtg atc ggc cat tcg gtg ggt gag ctt gcg gct gcg tat   2303
Pro Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr
            755                 760                 765

gtg tcc ggg gtg tgg tcg ttg gag gat gcc tgc act ttg gtg tcg gcg   2351
Val Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala
        770                 775                 780

cgg gct cgt ctg atg cag gct ctg ccc gcg ggt ggg gtg atg gtc gct   2399
Arg Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala
    785                 790                 795
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gtc ccg gtc tcg gag gat gag gcc cgg gcc gtg ctg ggt gag ggt gtg 2447
Val Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val
800 805 810 815

gag atc gcc gcg gtc aac ggc ccg tcg tcg gtg gtt ctc tcc ggt gat 2495
Glu Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp
820 825 830

gag gcc gcc gtg ctg cag gcc gcg gag ggg ctg ggg aag tgg acg cgg 2543
Glu Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg
835 840 845

ctg gcg acc agc cac gcg ttc cat tcc gcc cgt atg gaa ccc atg ctg 2591
Leu Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu
850 855 860

gag gag ttc cgg gcg gtc gcc gaa ggc ctg acc tac cgg acg ccg cag 2639
Glu Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln
865 870 875

gtc tcc atg gcc gtt ggt gat cag gtg acc acc gct gag tac tgg gtg 2687
Val Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val
880 885 890 895

cgg cag gtc cgg gac acg gtc cgg ttc ggc gag cag gtg gcc tcg tac 2735
Arg Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr
900 905 910

gag gac gcc gtg ttc gtc gag ctg ggt gcc gac cgg tca ctg gcc cgc 2783
Glu Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg
915 920 925

ctg gtc gac ggt gtc gcg atg ctg cac ggc gac cac gaa atc cag gcc 2831
Leu Val Asp Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala
930 935 940

gcg atc ggc gcc ctg gcc cac ctg tat gtc aac ggc gtc acg gtc gac 2879
Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp
945 950 955

tgg ccc gcg ctc ctg ggc gat gct ccg gca aca cgg gtg ctg gac ctt 2927
Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu
960 965 970 975

ccg aca tac gcc ttc cag cac cag cgc tac tgg ctc gag tcg gct ccc 2975
Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro
980 985 990

ccg gcc acg gcc gac tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc 3023
Pro Ala Thr Ala Asp Ser Gly His Pro Val Leu Gly Thr Gly Val Ala
995 1000 1005

gtc gcc ggg tcg ccg ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt 3071
Val Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly
1010 1015 1020

gcg gac cgc gcg gtg ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac 3119
Ala Asp Arg Ala Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp
1025 1030 1035

gcc acc gac tgc gcc acg gtc gaa cag ctc gac gtc acc tcc gtg ccc 3167
Ala Thr Asp Cys Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro
1040 1045 1050 1055

ggc gga tcc gcc cgc ggc agg gcc acc gcg cag acc tgg gtc gat gaa 3215
Gly Gly Ser Ala Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu
1060 1065 1070

ccc gcc gcc gac ggg cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc 3263
Pro Ala Ala Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly
1075 1080 1085

gac gcc ccg tgg acg ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc 3311
Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg
1090 1095 1100

gtg ccc cag ccc gaa gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg 3359
Val Pro Gln Pro Glu Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala
1105 1110 1115

gtg ccc gcg gac ggg ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc 3407
Val Pro Ala Asp Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val
1120 1125 1130 1135

ttc gtc gaa gcc gaa gtc gac agc cct gac ggc ttc gtg gca cac ccc 3455
Phe Val Glu Ala Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro
1140 1145 1150

gac ctg ctc gac gcg gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag 3503
Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln
1155 1160 1165

ccg acc gga tgg cgc gac ctc gcg gtg cac gcg tcg gac gcc acc gtg 3551
Pro Thr Gly Trp Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val
1170 1175 1180

ctg cgc gcc tgc ctc acc cgc cgc gac agt ggt gtc gtg gag ctc gcc 3599
Leu Arg Ala Cys Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala
1185 1190 1195

gcc ttc gac ggt gcc gga atg ccg gtg ctc acc gcg gag tcg gtg acg 3647
Ala Phe Asp Gly Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr
1200 1205 1210 1215

ctg ggc gag gtc gcg tcg gca ggc gga tcc gac gag tcg gac ggt ctg 3695
Leu Gly Glu Val Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu
1220 1225 1230

ctt cgg ctt gag tgg ttg ccg gtg gcg gag gcc cac tac gac ggt gcc 3743
Leu Arg Leu Glu Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala
1235 1240 1245

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gac gag ctg ccc gag ggc tac acc ctc atc acc gcc aca cac ccc gac     3791
Asp Glu Leu Pro Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp
        1250                1255                1260

gac ccc gac gac ccc acc aac ccc cac aac aca ccc aca cgc acc cac     3839
Asp Pro Asp Asp Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His
    1265                1270                1275

aca caa acc aca cgc gtc ctc acc gcc ctc caa cac cac ctc atc acc     3887
Thr Gln Thr Thr Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr
1280                1285                1290                1295

acc aac cac acc ctc atc gtc cac acc acc acc gac ccc cca ggc gcc     3935
Thr Asn His Thr Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala
                1300                1305                1310

gcc gtc acc ggc ctc acc cgc acc gca caa aac gaa cac ccc ggc cgc     3983
Ala Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg
            1315                1320                1325

atc cac ctc atc gaa acc cac cac ccc cac acc cca ctc ccc ctc acc     4031
Ile His Leu Ile Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr
        1330                1335                1340

caa ctc acc acc ctc cac caa ccc cac cta cgc ctc acc aac aac acc     4079
Gln Leu Thr Thr Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr
    1345                1350                1355

ctc cac acc ccc cac ctc acc ccc atc acc acc cac cac aac acc acc     4127
Leu His Thr Pro His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr
1360                1365                1370                1375

aca acc acc ccc aac acc cca ccc ctc aac ccc aac cac gcc atc ctc     4175
Thr Thr Thr Pro Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu
                1380                1385                1390

atc acc ggc ggc tcc ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc     4223
Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu
            1395                1400                1405

aac cac ccc cac acc tac ctc ctc tcc cgc aca cca cca ccc ccc acc     4271
Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr
        1410                1415                1420

aca ccc ggc acc cac atc ccc tgc gac ctc acc gac ccc acc caa atc     4319
Thr Pro Gly Thr His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile
    1425                1430                1435

acc caa gcc ctc acc cac ata cca caa ccc ctc acc ggc atc ttc cac     4367
Thr Gln Ala Leu Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His
1440                1445                1450                1455

acc gcc gcc acc ctc gac gac gcc acc ctc acc aac ctc acc ccc caa     4415
Thr Ala Ala Thr Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln
                1460                1465                1470
```

cac ctc acc acc acc ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc 4463
His Leu Thr Thr Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu
1475 1480 1485

cac cac cac acc caa aac caa ccc ctc acc cac ttc gtc ctc tac tcc 4511
His His His Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser
1490 1495 1500

agc gcc gcc gcc acc ctc ggc agc ccc ggc caa gcc aac tac gcc gcc 4559
Ser Ala Ala Ala Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala
1505 1510 1515

gcc aac gcc ttc ctc gac gcc ctc gcc acc cac cgc cac acc caa gga 4607
Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly
1520 1525 1530 1535

caa ccc gcc acc acc atc gcc tgg ggc atg tgg cac acc acc acc aca 4655
Gln Pro Ala Thr Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr
1540 1545 1550

ctc acc agc caa ctc acc gac agc gac cgc gac cgc atc cgc cgc ggc 4703
Leu Thr Ser Gln Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly
1555 1560 1565

ggc ttc ctg ccg atc tcg gac gac gag ggc atg c 4737
Gly Phe Leu Pro Ile Ser Asp Asp Glu Gly Met
1570 1575

<210> 31
<211> 1578
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 31
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
1 5 10 15

Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
20 25 30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
35 40 45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
50 55 60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65 70 75 80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
85 90 95

```
Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
            100                 105                 110

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
        115                 120                 125

Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
    130                 135                 140

Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
145                 150                 155                 160

Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
                165                 170                 175

Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
            180                 185                 190

Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
        195                 200                 205

Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
    210                 215                 220

Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
225                 230                 235                 240

Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
                245                 250                 255

Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
            260                 265                 270

Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
        275                 280                 285

Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
    290                 295                 300

Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
305                 310                 315                 320

Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
                325                 330                 335

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
            340                 345                 350

Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
        355                 360                 365

Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
    370                 375                 380

Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
385                 390                 395                 400
```

Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
405 410 415

Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
420 425 430

Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
435 440 445

Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
450 455 460

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
465 470 475 480

Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
485 490 495

Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
500 505 510

Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
515 520 525

Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
530 535 540

Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
545 550 555 560

Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
565 570 575

Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
580 585 590

Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
595 600 605

Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
610 615 620

Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
625 630 635 640

Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
645 650 655

His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
660 665 670

Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
675 680 685

Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala Phe Pro
690 695 700

```
Val Phe Ala Arg Ile His Gln Gln Val Trp Asp Leu Leu Asp Val Pro
705                 710                 715                 720

Asp Leu Glu Val Asn Glu Thr Gly Tyr Ala Gln Pro Ala Leu Phe Ala
                725                 730                 735

Met Gln Val Ala Leu Phe Gly Leu Leu Glu Ser Trp Gly Val Arg Pro
            740                 745                 750

Asp Ala Val Ile Gly His Ser Val Gly Glu Leu Ala Ala Ala Tyr Val
        755                 760                 765

Ser Gly Val Trp Ser Leu Glu Asp Ala Cys Thr Leu Val Ser Ala Arg
    770                 775                 780

Ala Arg Leu Met Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val
785                 790                 795                 800

Pro Val Ser Glu Asp Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu
                805                 810                 815

Ile Ala Ala Val Asn Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu
            820                 825                 830

Ala Ala Val Leu Gln Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu
        835                 840                 845

Ala Thr Ser His Ala Phe His Ser Ala Arg Met Glu Pro Met Leu Glu
    850                 855                 860

Glu Phe Arg Ala Val Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val
865                 870                 875                 880

Ser Met Ala Val Gly Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg
                885                 890                 895

Gln Val Arg Asp Thr Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu
            900                 905                 910

Asp Ala Val Phe Val Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu
        915                 920                 925

Val Asp Gly Val Ala Met Leu His Gly Asp His Glu Ile Gln Ala Ala
    930                 935                 940

Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp
945                 950                 955                 960

Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro
                965                 970                 975

Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro
            980                 985                 990

Ala Thr Ala Asp Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val
        995                1000                1005
```

Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala
1010 1015 1020

Asp Arg Ala Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala
025 1030 1035 104

Thr Asp Cys Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly
1045 1050 1055

Gly Ser Ala Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro
1060 1065 1070

Ala Ala Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp
1075 1080 1085

Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val
1090 1095 1100

Pro Gln Pro Glu Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val
105 1110 1115 112

Pro Ala Asp Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe
1125 1130 1135

Val Glu Ala Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp
1140 1145 1150

Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro
1155 1160 1165

Thr Gly Trp Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu
1170 1175 1180

Arg Ala Cys Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala
185 1190 1195 120

Phe Asp Gly Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu
1205 1210 1215

Gly Glu Val Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu
1220 1225 1230

Arg Leu Glu Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp
1235 1240 1245

Glu Leu Pro Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp
1250 1255 1260

Pro Asp Asp Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr
265 1270 1275 128

Gln Thr Thr Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr
1285 1290 1295

Asn His Thr Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala
1300 1305 1310

Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile
1315 1320 1325

His Leu Ile Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln
1330 1335 1340

Leu Thr Thr Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu
345 1350 1355 136

His Thr Pro His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr
1365 1370 1375

Thr Thr Pro Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile
1380 1385 1390

Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn
1395 1400 1405

His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr
1410 1415 1420

Pro Gly Thr His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr
425 1430 1435 144

Gln Ala Leu Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr
1445 1450 1455

Ala Ala Thr Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His
1460 1465 1470

Leu Thr Thr Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His
1475 1480 1485

His His Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser
1490 1495 1500

Ala Ala Ala Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala
505 1510 1515 152

Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln
1525 1530 1535

Pro Ala Thr Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu
1540 1545 1550

Thr Ser Gln Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly
1555 1560 1565

Phe Leu Pro Ile Ser Asp Asp Glu Gly Met
1570 1575

<210> 32
<211> 4818
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(4817)

<400> 32

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   Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val
     1               5                  10                  15

gtg gcg gcc gcg ctc gac gac gcg ccg gac gtg ccg ctg ctg cgc ggg    95
Val Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly
                20                  25                  30

ctg cgg cgt acg acc gtc cgg cgt gcc gcc gtc cgg gaa cgc tct ctc    143
Leu Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu
            35                  40                  45

gcc gac cgc tcg ccg tgc tgc ccg acg acg agc gcg ccg acg cct ccc    191
Ala Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro
        50                  55                  60

tcg cgt tcg tcc tgg aac agc acc gcc acc gtg ctc ggc cac ctg ggc    239
Ser Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly
    65                  70                  75

gcc gaa gac atc ccg gcg acg acg acg ttc aag gaa ctc ggc atc gac    287
Ala Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp
80                  85                  90                  95

tcg ctc acc gcg gtc cag ctg cgc aac gcg ctg acc acg gcg acc ggc    335
Ser Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly
                100                 105                 110

gta cgc ctc aac gcc aca gcg gtc ttc gac ttt ccg acg ccg cgc gcg    383
Val Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala
            115                 120                 125

ctc gcc gcg aga ctc ggc gac gag ctg gcc ggt acc cgc gcg ccc gtc    431
Leu Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val
        130                 135                 140

gcg gcc cgg acc gcg gcc acc gcg gcc gcg cac gac gaa ccg ctg gcg    479
Ala Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala
    145                 150                 155

atc gtg ggc atg gcc tgc cgt ctg ccg ggc ggg gtc gcg tcg cca cag    527
Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln
160                 165                 170                 175

gag ctg tgg cgt ctc gtc gcg tcc ggc acc gac gcc atc acg gag ttc    575
Glu Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe
                180                 185                 190
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ccc gcg gac cgc ggc tgg gac gtg gac gcg ctc tac gac ccg gac ccc   623
Pro Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro
            195                 200                 205

gac gcg atc ggc aag acc ttc gtc cgg cac ggc ggc ttc ctc gac ggt   671
Asp Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly
        210                 215                 220

gcg acc ggc ttc gac gcg gcg ttc ttc ggg atc agc ccg cgc gag gcc   719
Ala Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala
    225                 230                 235

ctg gcc atg gac ccg cag caa cgg gtg ctc ctg gag acg tcc tgg gag   767
Leu Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu
240                 245                 250                 255

gcg ttc gaa agc gcg ggc atc acc ccg gac gcg gcg cgg ggc agc gac   815
Ala Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp
                260                 265                 270

acc ggc gtg ttc atc ggc gcg ttc tcc tac ggg tac ggc acg ggt gcg   863
Thr Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala
            275                 280                 285

gat acc aac ggc ttc ggc gcg aca ggg tcg cag acc agc gtg ctc tcc   911
Asp Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser
        290                 295                 300

ggc cgc ctc tcg tac ttc tac ggt ctg gag ggc cct tcg gtc acg gtc   959
Gly Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val
    305                 310                 315

gac acc gcc tgc tcg tcg tca ctg gtc gcc ctg cac cag gca ggg cag   1007
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln
320                 325                 330                 335

tcc ctg cgc tcg ggc gaa tgc tcg ctc gcc ctg gtc ggc ggt gtc acg   1055
Ser Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr
                340                 345                 350

gtg atg gcg tcg ccc ggc gga ttc gtc gag ttc tcc cgg cag cgc ggg   1103
Val Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly
            355                 360                 365

ctc gcg ccg gac ggg cgg gcg aag gcg ttc ggc gcg ggc gcg gac ggt   1151
Leu Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly
        370                 375                 380

acg agc ttc gcc gag ggc gcc ggt gcc ctg gtg gtc gag cgg ctc tcc   1199
Thr Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser
    385                 390                 395

gac gcg gag cgc cac ggc cac acc gtc ctc gcc ctc gta cgc ggc tcc   1247
Asp Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser
400                 405                 410                 415
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gcg gct aac tcc gac ggc gcg tcg aac ggt ctg tcg gcg ccg aac ggc   1295
Ala Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly
                420                 425                 430

ccc tcc cag gaa cgc gtc atc cac cag gcc ctc gcg aac gcg aaa ctc   1343
Pro Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu
            435                 440                 445

acc ccc gcc gat gtc gac gcg gtc gag gcg cac ggc acc ggc acc cgc   1391
Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg
        450                 455                 460

ctc ggc gac ccc atc gag gcg cag gcg ctg ctc gcg acg tac gga cag   1439
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln
    465                 470                 475

gac cgg gcg acg ccc ctg ctg ctc ggc tcg ctg aag tcg aac atc ggg   1487
Asp Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly
480                 485                 490                 495

cac gcc cag gcc gcg tca ggg gtc gcc ggg atc atc aag atg gtg cag   1535
His Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln
                500                 505                 510

gcc atc cgg cac ggg gaa ctg ccg ccg aca ctg cac gcg gac gag ccg   1583
Ala Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro
            515                 520                 525

tcg ccg cac gtc gac tgg acg gcc ggt gcc gtc gag ctc ctg acg tcg   1631
Ser Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser
        530                 535                 540

gcc cgg ccg tgg ccg ggg acc ggt cgc ccg cgc cgc gct gcc gtc tcg   1679
Ala Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser
    545                 550                 555

tcg ttc ggc gtg agc ggc acg aac gcc cac atc atc ctt gag gca gga   1727
Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly
560                 565                 570                 575

ccg gtc aaa acg gga ccg gtc gag gca gga gcg atc gag gca gga ccg   1775
Pro Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro
                580                 585                 590

gtc gaa gta gga ccg gtc gag gct gga ccg ctc ccc gcg gcg ccg ccg   1823
Val Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro
            595                 600                 605

tca gca ccg ggc gaa gac ctt ccg ctg ctc gtg tcg gcg cgt tcc ccg   1871
Ser Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro
        610                 615                 620

gag gca ctc gac gag cag atc ggg cgc ctg cgc gcc tat ctc gac acc   1919
Glu Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr
    625                 630                 635
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ggc ccg ggc gtc gac cgg gcg gcc gtg gcg cag aca ctg gcc cgg cgt   1967
Gly Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg
640                 645                 650                 655

acg cac ttc acc cac cgg gcc gta ctg ctc ggg gac acc gtc atc ggc   2015
Thr His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly
                660                 665                 670

gct ccc ccc gcg gac cag gcc gac gaa ctc gtc ttc gtc tac tcc ggt   2063
Ala Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly
            675                 680                 685

cag ggc acc cag cat ccc gcg atg ggc gag cag cta gcc gat tcg tcg   2111
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser
        690                 695                 700

gtg gtg ttc gcc gag cgg atg gcc gag tgt gcg gcg gcg ttg cgc gag   2159
Val Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu
    705                 710                 715

ttc gtg gac tgg gat ctg ttc acg gtt ctg gat gat ccg gcg gtg gtg   2207
Phe Val Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val
720                 725                 730                 735

gac cgg gtt gat gtg gtc cag ccc gct tcc tgg gcg atg atg gtt tcc   2255
Asp Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser
                740                 745                 750

ctg gcc gcg gtg tgg cag gcg gcc ggt gtg cgg ccg gat gcg gtg atc   2303
Leu Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile
            755                 760                 765

ggc cat tcg cag ggt gag atc gcc gca gct tgt gtg gcg ggt gcg gtg   2351
Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val
        770                 775                 780

tca cta cgc gat gcc gcc cgg atc gtg acc ttg cgc agc cag gcg atc   2399
Ser Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile
    785                 790                 795

gcc cgg ggc ctg gcg ggc cgg ggc gcg atg gca tcc gtc gcc ctg ccc   2447
Ala Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro
800                 805                 810                 815

gcg cag gat gtc gag ctg gtc gac ggg gcc tgg atc gcc gcc cac aac   2495
Ala Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn
                820                 825                 830

ggg ccc gcc tcc acc gtg atc gcg ggc acc ccg gaa gcg gtc gac cat   2543
Gly Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His
            835                 840                 845

gtc ctc acc gct cat gag gca caa ggg gtg cgg gtg cgg cgg atc acc   2591
Val Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr
        850                 855                 860
```

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gtc gac tat gcc tcg cac acc ccg cac gtc gag ctg atc cgc gac gaa   2639
Val Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu
    865                 870                 875

cta ctc gac atc act agc gac agc agc tcg cag acc ccg ctc gtg ccg   2687
Leu Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro
880                 885                 890                 895

tgg ctg tcg acc gtg gac ggc acc tgg gtc gac agc ccg ctg gac ggg   2735
Trp Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly
                900                 905                 910

gag tac tgg tac cgg aac ctg cgt gaa ccg gtc ggt ttc cac ccc gcc   2783
Glu Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala
            915                 920                 925

gtc agc cag ttg cag gcc cag ggc gac acc gtg ttc gtc gag gtc agc   2831
Val Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser
        930                 935                 940

gcc agc ccg gtg ttg ttg cag gcg atg gac gac gat gtc gtc acg gtt   2879
Ala Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val
    945                 950                 955

gcc acg ctg cgt cgt gac gac ggc gac gcc acc cgg atg ctc acc gcc   2927
Ala Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala
960                 965                 970                 975

ctg gca cag gcc tat gtc cac ggc gtc acc gtc gac tgg ccc gcc atc   2975
Leu Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile
                980                 985                 990

ctc ggc acc acc aca acc cgg gta ctg gac ctt ccg acc tac gcc ttc   3023
Leu Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe
            995                1000                1005

caa cac cag cgg tac tgg ctc gag tcg gct ccc ccg gcc acg gcc gac   3071
Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp
       1010                1015                1020

tcg ggc cac ccc gtc ctc ggc acc gga gtc gcc gtc gcc ggg tcg ccg   3119
Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro
   1025                1030                1035

ggc cgg gtg ttc acg ggt ccc gtg ccc gcc ggt gcg gac cgc gcg gtg   3167
Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val
1040                1045                1050                1055

ttc atc gcc gaa ctg gcg ctc gcc gcc gcc gac gcc acc gac tgc gcc   3215
Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala
               1060                1065                1070

acg gtc gaa cag ctc gac gtc acc tcc gtg ccc ggc gga tcc gcc cgc   3263
Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg
           1075                1080                1085
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ggc agg gcc acc gcg cag acc tgg gtc gat gaa ccc gcc gcc gac ggg   3311
Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly
       1090                1095                1100

cgg cgc cgc ttc acc gtc cac acc cgc gtc ggc gac gcc ccg tgg acg   3359
Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr
   1105                1110                1115

ctg cac gcc gag ggg gtt ctc cgc ccc ggc cgc gtg ccc cag ccc gaa   3407
Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu
1120                1125                1130                1135

gcc gtc gac acc gcc tgg ccc ccg ccg ggc gcg gtg ccc gcg gac ggg   3455
Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly
               1140                1145                1150

ctg ccc ggg gcg tgg cga cgc gcg gac cag gtc ttc gtc gaa gcc gaa   3503
Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
           1155                1160                1165

gtc gac agc cct gac ggc ttc gtg gca cac ccc gac ctg ctc gac gcg   3551
Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
       1170                1175                1180

gtc ttc tcc gcg gtc ggc gac ggg agc cgc cag ccg acc gga tgg cgc   3599
Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
   1185                1190                1195

gac ctc gcg gtg cac gcg tcg gac gcc acc gtg ctg cgc gcc tgc ctc   3647
Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
1200                1205                1210                1215

acc cgc cgc gac agt ggt gtc gtg gag ctc gcc gcc ttc gac ggt gcc   3695
Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
               1220                1225                1230

gga atg ccg gtg ctc acc gcg gag tcg gtg acg ctg ggc gag gtc gcg   3743
Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
           1235                1240                1245

tcg gca ggc gga tcc gac gag tcg gac ggt ctg ctt cgg ctt gag tgg   3791
Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
       1250                1255                1260

ttg ccg gtg gcg gag gcc cac tac gac ggt gcc gac gag ctg ccc gag   3839
Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
   1265                1270                1275

ggc tac acc ctc atc acc gcc aca cac ccc gac gac ccc gac gac ccc   3887
Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro
1280                1285                1290                1295

acc aac ccc cac aac aca ccc aca cgc acc cac aca caa acc aca cgc   3935
Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
               1300                1305                1310
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gtc ctc acc gcc ctc caa cac cac ctc atc acc acc aac cac acc ctc   3983
Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
            1315                1320                1325

atc gtc cac acc acc acc gac ccc cca ggc gcc gcc gtc acc ggc ctc   4031
Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
        1330                1335                1340

acc cgc acc gca caa aac gaa cac ccc ggc cgc atc cac ctc atc gaa   4079
Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
    1345                1350                1355

acc cac cac ccc cac acc cca ctc ccc ctc acc caa ctc acc acc ctc   4127
Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
1360                1365                1370                1375

cac caa ccc cac cta cgc ctc acc aac aac acc ctc cac acc ccc cac   4175
His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
                1380                1385                1390

ctc acc ccc atc acc acc cac cac aac acc acc aca acc acc ccc aac   4223
Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn
            1395                1400                1405

acc cca ccc ctc aac ccc aac cac gcc atc ctc atc acc ggc ggc tcc   4271
Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
        1410                1415                1420

ggc acc ctc gcc ggc atc ctc gcc cgc cac ctc aac cac ccc cac acc   4319
Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
    1425                1430                1435

tac ctc ctc tcc cgc aca cca cca ccc ccc acc aca ccc ggc acc cac   4367
Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
1440                1445                1450                1455

atc ccc tgc gac ctc acc gac ccc acc caa atc acc caa gcc ctc acc   4415
Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
                1460                1465                1470

cac ata cca caa ccc ctc acc ggc atc ttc cac acc gcc gcc acc ctc   4463
His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
            1475                1480                1485

gac gac gcc acc ctc acc aac ctc acc ccc caa cac ctc acc acc acc   4511
Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
        1490                1495                1500

ctc caa ccc aaa gcc gac gcc gcc tgg cac ctc cac cac cac acc caa   4559
Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
    1505                1510                1515

aac caa ccc ctc acc cac ttc gtc ctc tac tcc agc gcc gcc gcc acc   4607
Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
1520                1525                1530                1535
```

ctc ggc agc ccc ggc caa gcc aac tac gcc gcc gcc aac gcc ttc ctc 4655
Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
1540 1545 1550

gac gcc ctc gcc acc cac cgc cac acc caa gga caa ccc gcc acc acc 4703
Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
1555 1560 1565

atc gcc tgg ggc atg tgg cac acc acc acc aca ctc acc agc caa ctc 4751
Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
1570 1575 1580

acc gac agc gac cgc gac cgc atc cgc cgc ggc ggc ttc ctg ccg atc 4799
Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
1585 1590 1595

tcg gac gac gag ggc atg c 4818
Ser Asp Asp Glu Gly Met
1600 1605

<210> 33
<211> 1605
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 33
Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
1 5 10 15

Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
20 25 30

Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
35 40 45

Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
50 55 60

Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
65 70 75 80

Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
85 90 95

Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
100 105 110

Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
115 120 125

Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
130 135 140

Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
145 150 155 160

Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
165 170 175

Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
180 185 190

Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
195 200 205

Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
210 215 220

Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
225 230 235 240

Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
245 250 255

Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
260 265 270

Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
275 280 285

Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
290 295 300

Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
305 310 315 320

Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser
325 330 335

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Val Gly Gly Val Thr Val
340 345 350

Met Ala Ser Pro Gly Gly Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
355 360 365

Ala Pro Asp Gly Arg Ala Lys Ala Phe Gly Ala Gly Ala Asp Gly Thr
370 375 380

Ser Phe Ala Glu Gly Ala Gly Ala Leu Val Val Glu Arg Leu Ser Asp
385 390 395 400

Ala Glu Arg His Gly His Thr Val Leu Ala Leu Val Arg Gly Ser Ala
405 410 415

Ala Asn Ser Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Asn Gly Pro
420 425 430

Ser Gln Glu Arg Val Ile His Gln Ala Leu Ala Asn Ala Lys Leu Thr
435 440 445

Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Arg Leu
450 455 460

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp
465 470 475 480

Arg Ala Thr Pro Leu Leu Leu Gly Ser Leu Lys Ser Asn Ile Gly His
485 490 495

Ala Gln Ala Ala Ser Gly Val Ala Gly Ile Ile Lys Met Val Gln Ala
500 505 510

Ile Arg His Gly Glu Leu Pro Pro Thr Leu His Ala Asp Glu Pro Ser
515 520 525

Pro His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Ser Ala
530 535 540

Arg Pro Trp Pro Gly Thr Gly Arg Pro Arg Arg Ala Ala Val Ser Ser
545 550 555 560

Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala Gly Pro
565 570 575

Val Lys Thr Gly Pro Val Glu Ala Gly Ala Ile Glu Ala Gly Pro Val
580 585 590

Glu Val Gly Pro Val Glu Ala Gly Pro Leu Pro Ala Ala Pro Pro Ser
595 600 605

Ala Pro Gly Glu Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
610 615 620

Ala Leu Asp Glu Gln Ile Gly Arg Leu Arg Ala Tyr Leu Asp Thr Gly
625 630 635 640

Pro Gly Val Asp Arg Ala Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
645 650 655

His Phe Thr His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Gly Ala
660 665 670

Pro Pro Ala Asp Gln Ala Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
675 680 685

Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Asp Ser Ser Val
690 695 700

Val Phe Ala Glu Arg Met Ala Glu Cys Ala Ala Ala Leu Arg Glu Phe
705 710 715 720

Val Asp Trp Asp Leu Phe Thr Val Leu Asp Asp Pro Ala Val Val Asp
725 730 735

Arg Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu
740 745 750

Ala Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly
755 760 765

His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser
770 775 780

Leu Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala
785 790 795 800

Arg Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala
805 810 815

Gln Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly
820 825 830

Pro Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val
835 840 845

Leu Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val
850 855 860

Asp Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu
865 870 875 880

Leu Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp
885 890 895

Leu Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu
900 905 910

Tyr Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val
915 920 925

Ser Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala
930 935 940

Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala
945 950 955 960

Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu
965 970 975

Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu
980 985 990

Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
995 1000 1005

His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
1010 1015 1020

Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
025 1030 1035 104

Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
1045 1050 1055

Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr
1060 1065 1070

Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
1075 1080 1085

Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
1090 1095 1100

Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
105 1110 1115 112

His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
1125 1130 1135

Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
1140 1145 1150

Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
1155 1160 1165

Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
1170 1175 1180

Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
185 1190 1195 120

Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
1205 1210 1215

Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
1220 1225 1230

Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
1235 1240 1245

Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
1250 1255 1260

Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
265 1270 1275 128

Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
1285 1290 1295

Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
1300 1305 1310

Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
1315 1320 1325

Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
1330 1335 1340

Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
345 1350 1355 136

His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
1365 1370 1375

Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
1380 1385 1390

Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
1395 1400 1405

Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
1410 1415 1420

Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
425 1430 1435 144

Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
1445 1450 1455

Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
1460 1465 1470

Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
1475 1480 1485

Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
1490 1495 1500

Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
505 1510 1515 152

Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
1525 1530 1535

Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
1540 1545 1550

Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
1555 1560 1565

Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
1570 1575 1580

Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
585 1590 1595 160

Asp Asp Glu Gly Met
1605

<210> 34
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 34
ggc cgt ccg cgc cgt gcg gcg gtc tcg tcg ttc 33
Gly Arg Pro Arg Arg Ala Ala Val Ser Ser Phe
1 5 10

<210> 35
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 35
Gly Arg Pro Arg Arg Ala Ala Val Ser Ser Phe
1 5 10

<210> 36
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 36
acc cag cat ccc gcg atg ggt gag cgg ctc gcc 33
Thr Gln His Pro Ala Met Gly Glu Arg Leu Ala
1 5 10

<210> 37
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 37
Thr Gln His Pro Ala Met Gly Glu Arg Leu Ala
1 5 10

<210> 38
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 38
tac gcc ttc cag cgg cgg ccc tac tgg atc gag 33
Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu
1 5 10

<210> 39
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 39
Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu
1 5 10

<210> 40
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 40
gac cgg ccc cgt cgg gcg ggc gtg tcg tcc ttc 33
Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 41
<211> 11
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 41
Asp Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 42
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 42
tgg cag tgg ctg ggg atg ggc agt gcc ctg cgg 33
Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg
1 5 10

<210> 43
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 43
Trp Gln Trp Leu Gly Met Gly Ser Ala Leu Arg
1 5 10

<210> 44
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 44
tac gcc ttc caa cac cag cgg tac tgg gtc gag 33
Tyr Ala Phe Gln His Gln Arg Tyr Trp Val Glu
1 5 10

<210> 45
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 45
Tyr Ala Phe Gln His Gln Arg Tyr Trp Val Glu
1 5 10

<210> 46
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 46
ggc cga gcg cgc cgg gca ggc gtg tcg tcc ttc 33
Gly Arg Ala Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 47
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 47
Gly Arg Ala Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 48
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 48
tcg cag cgt gct ggc atg ggt gag gaa ctg gcc 33
Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
1 5 10

<210> 49
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 49
Ser Gln Arg Ala Gly Met Gly Glu Glu Leu Ala
1 5 10

<210> 50
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic
PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 50
tac gcc ttc cag cac cag cgc tac tgg ctc gag 33
Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu
1 5 10

<210> 51
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
synthase fragment

<400> 51
Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu
1 5 10

<210> 52
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 52
gcg cga ccg cgc cgg gcg ggg gtc tcg tcg ttc 33
Ala Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 53
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 53
Ala Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
1 5 10

<210> 54
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 54
tgg cag tgg gcg ggc atg gcc gtc gac ctg ctc 33
Trp Gln Trp Ala Gly Met Ala Val Asp Leu Leu
1 5 10

<210> 55
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 55
Trp Gln Trp Ala Gly Met Ala Val Asp Leu Leu
1 5 10

<210> 56
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 56
tac ccg ttc cag cgc gag cgc gtc tgg ctc gaa 33
Tyr Pro Phe Gln Arg Glu Arg Val Trp Leu Glu
1 5 10

<210> 57
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 57
Tyr Pro Phe Gln Arg Glu Arg Val Trp Leu Glu
1 5 10

<210> 58
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 58
gac ggg gtg cgc cgg gca ggt gtg tcg gcg ttc 33
Asp Gly Val Arg Arg Ala Gly Val Ser Ala Phe
1 5 10

<210> 59
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 59
Asp Gly Val Arg Arg Ala Gly Val Ser Ala Phe
1 5 10

<210> 60
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 60
gcc cag tgg gaa ggc atg gcg cgg gag ttg ttg 33
Ala Gln Trp Glu Gly Met Ala Arg Glu Leu Leu
1 5 10

<210> 61
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 61
Ala Gln Trp Glu Gly Met Ala Arg Glu Leu Leu
1 5 10

<210> 62
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(33)

<400> 62
tat cct ttc cag ggc aag cgg ttc tgg ctg ctg 33
Tyr Pro Phe Gln Gly Lys Arg Phe Trp Leu Leu
1 5 10

<210> 63
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 63
Tyr Pro Phe Gln Gly Lys Arg Phe Trp Leu Leu
1 5 10

<210> 64
<211> 480
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (3)..(479)

<400> 64
cc ggc gcc gtc gaa ctg ctg acg tcg gcc cgg ccg tgg ccc gag acc 47
Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr
1 5 10 15

gac cgg cca cgg cgt gcc gcc gtc tcc tcg ttc ggg gtg agc ggc acc 95
Asp Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr
20 25 30

aac gcc cac gtc atc ctg gag gcc gga ccg gta acg gag acg ccc gcg 143
Asn Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala
35 40 45

gca tcg cct tcc ggt gac ctt ccc ctg ctg gtg tcg gca cgc tca ccg 191
Ala Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro
50 55 60

```
gaa gcg ctc gac gag cag atc cgc cga ctg cgc gcc tac ctg gac acc   239
Glu Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr
 65                  70                  75

acc ccg gac gtc gac cgg gtg gcc gtg gca cag acg ctg gcc cgg cgc   287
Thr Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg
 80                  85                  90                  95

aca cac ttc gcc cac cgc gcc gtg ctg ctc ggt gac acc gtc atc acc   335
Thr His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr
                100                 105                 110

aca ccc ccc gcg gac cgg ccc gac gaa ctc gtc ttc gtc tac tcc ggc   383
Thr Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly
            115                 120                 125

cag ggc acc cag cat ccc gcg atg ggc gag cag ctc gcc gcc gcc cat   431
Gln Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala His
        130                 135                 140

ccc gtg ttc gcc gac gcc tgg cat gaa gcg ctc cgc cgc ctt gac aac c 480
Pro Val Phe Ala Asp Ala Trp His Glu Ala Leu Arg Arg Leu Asp Asn
    145                 150                 155


<210> 65
<211> 159
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
      synthase fragment

<400> 65
Gly Ala Val Glu Leu Leu Thr Ser Ala Arg Pro Trp Pro Glu Thr Asp
  1               5                  10                  15

Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser Gly Thr Asn
             20                  25                  30

Ala His Val Ile Leu Glu Ala Gly Pro Val Thr Glu Thr Pro Ala Ala
         35                  40                  45

Ser Pro Ser Gly Asp Leu Pro Leu Leu Val Ser Ala Arg Ser Pro Glu
     50                  55                  60

Ala Leu Asp Glu Gln Ile Arg Arg Leu Arg Ala Tyr Leu Asp Thr Thr
 65                  70                  75                  80

Pro Asp Val Asp Arg Val Ala Val Ala Gln Thr Leu Ala Arg Arg Thr
                 85                  90                  95

His Phe Ala His Arg Ala Val Leu Leu Gly Asp Thr Val Ile Thr Thr
            100                 105                 110
```

```
Pro Pro Ala Asp Arg Pro Asp Glu Leu Val Phe Val Tyr Ser Gly Gln
        115                 120                 125

Gly Thr Gln His Pro Ala Met Gly Glu Gln Leu Ala Ala Ala His Pro
    130                 135                 140

Val Phe Ala Asp Ala Trp His Glu Ala Leu Arg Arg Leu Asp Asn
145                 150                 155


<210> 66
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic
      PKS synthase fragment

<220>
<221> CDS
<222> (3)..(119)

<400> 66
tc ctc ggg gct ggg tca cgg cac gac gcg gat gtg ccc gcg tac gcg    47
   Leu Gly Ala Gly Ser Arg His Asp Ala Asp Val Pro Ala Tyr Ala
     1               5                  10                  15

ttc caa cgg cgg cac tac tgg atc gag tcg gca cgc ccg gcc gca tcc   95
Phe Gln Arg Arg His Tyr Trp Ile Glu Ser Ala Arg Pro Ala Ala Ser
                 20                  25                  30

gac gcg ggc cac ccc gtg ctg ggc t                                120
Asp Ala Gly His Pro Val Leu Gly
             35


<210> 67
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS
      synthase fragment

<400> 67
Leu Gly Ala Gly Ser Arg His Asp Ala Asp Val Pro Ala Tyr Ala Phe
  1               5                  10                  15

Gln Arg Arg His Tyr Trp Ile Glu Ser Ala Arg Pro Ala Ala Ser Asp
             20                  25                  30

Ala Gly His Pro Val Leu Gly
         35
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<210> 68
<211> 480
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(480)

<400> 68
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tcg gcc agg ccg tgg ccg cgg acc ggc cgt ccg cgc cgt gcg gcg gtc    48
Ser Ala Arg Pro Trp Pro Arg Thr Gly Arg Pro Arg Arg Ala Ala Val
  1               5                  10                  15

tcg tcg ttc ggg gtg agc ggc acc aac gcc cac atc atc ctg gag gcc    96
Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala
             20                  25                  30

gga ccc gac cag gag gag ccg tcg gca gaa ccg gcc ggt gac ctc ccg   144
Gly Pro Asp Gln Glu Glu Pro Ser Ala Glu Pro Ala Gly Asp Leu Pro
         35                  40                  45

ctg ctc gtg tcg gca cgg tcc ccg gag gca ctg gac gag cag atc ggg   192
Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu Asp Glu Gln Ile Gly
     50                  55                  60

cgc ctg cgc gac tat ctc gac gcc gcc ccc ggc gtg gac ctg gcg gcc   240
Arg Leu Arg Asp Tyr Leu Asp Ala Ala Pro Gly Val Asp Leu Ala Ala
 65                  70                  75                  80

gtg gcg cgg aca ctg gcc acg cgt acg cac ttc tcc cac cgc gcc gta   288
Val Ala Arg Thr Leu Ala Thr Arg Thr His Phe Ser His Arg Ala Val
                 85                  90                  95

ctg ctc ggt gac acc gtc atc acc gct ccc ccc gtg gaa cag ccg ggc   336
Leu Leu Gly Asp Thr Val Ile Thr Ala Pro Pro Val Glu Gln Pro Gly
            100                 105                 110

gag ctc gtc ttc gtc tac tcg gga cag ggc acc cag cat ccc gcg atg   384
Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr Gln His Pro Ala Met
        115                 120                 125

ggt gag cgg ctc gcc gca gcc ttc ccc gtg ttc gcc gac ccg gac gta   432
Gly Glu Arg Leu Ala Ala Ala Phe Pro Val Phe Ala Asp Pro Asp Val
    130                 135                 140

ccc gcc tac gcc ttc cag cgg cgg ccc tac tgg atc gag tcc gcg ccg   480
Pro Ala Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro
145                 150                 155                 160
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<210> 69
<211> 160
<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 69

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Ser Ala Arg Pro Trp Pro Arg Thr Gly Arg Pro Arg Arg Ala Ala Val
  1               5                  10                  15

Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ala
             20                  25                  30

Gly Pro Asp Gln Glu Glu Pro Ser Ala Glu Pro Ala Gly Asp Leu Pro
         35                  40                  45

Leu Leu Val Ser Ala Arg Ser Pro Glu Ala Leu Asp Glu Gln Ile Gly
     50                  55                  60

Arg Leu Arg Asp Tyr Leu Asp Ala Ala Pro Gly Val Asp Leu Ala Ala
 65                  70                  75                  80

Val Ala Arg Thr Leu Ala Thr Arg Thr His Phe Ser His Arg Ala Val
                 85                  90                  95

Leu Leu Gly Asp Thr Val Ile Thr Ala Pro Pro Val Glu Gln Pro Gly
            100                 105                 110

Glu Leu Val Phe Val Tyr Ser Gly Gln Gly Thr Gln His Pro Ala Met
        115                 120                 125

Gly Glu Arg Leu Ala Ala Ala Phe Pro Val Phe Ala Asp Pro Asp Val
    130                 135                 140

Pro Ala Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro
145                 150                 155                 160
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<210> 70
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA encoding synthetic PKS synthase fragment

<220>
<221> CDS
<222> (1)..(60)

<400> 70

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gac ccg gac gta ccc gcc tac gcc ttc cag cgg cgg ccc tac tgg atc   48
Asp Pro Asp Val Pro Ala Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile
  1               5                  10                  15
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gag tcc gcg ccg 60
Glu Ser Ala Pro
20

<210> 71
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic PKS synthase fragment

<400> 71
Asp Pro Asp Val Pro Ala Tyr Ala Phe Gln Arg Arg Pro Tyr Trp Ile
1 5 10 15

Glu Ser Ala Pro
20